

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
PUBLICATIONS BRANCH

AGRICULTURE
IN CANADA

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PAMPHLET No. 4 5

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Reprinted from THE AGRICULTURAL GAZETTE OF CANADA, Vol. III, by the authority
of the Hon. MARTIN BURRELL, Minister of Agriculture.

JANUARY 1917

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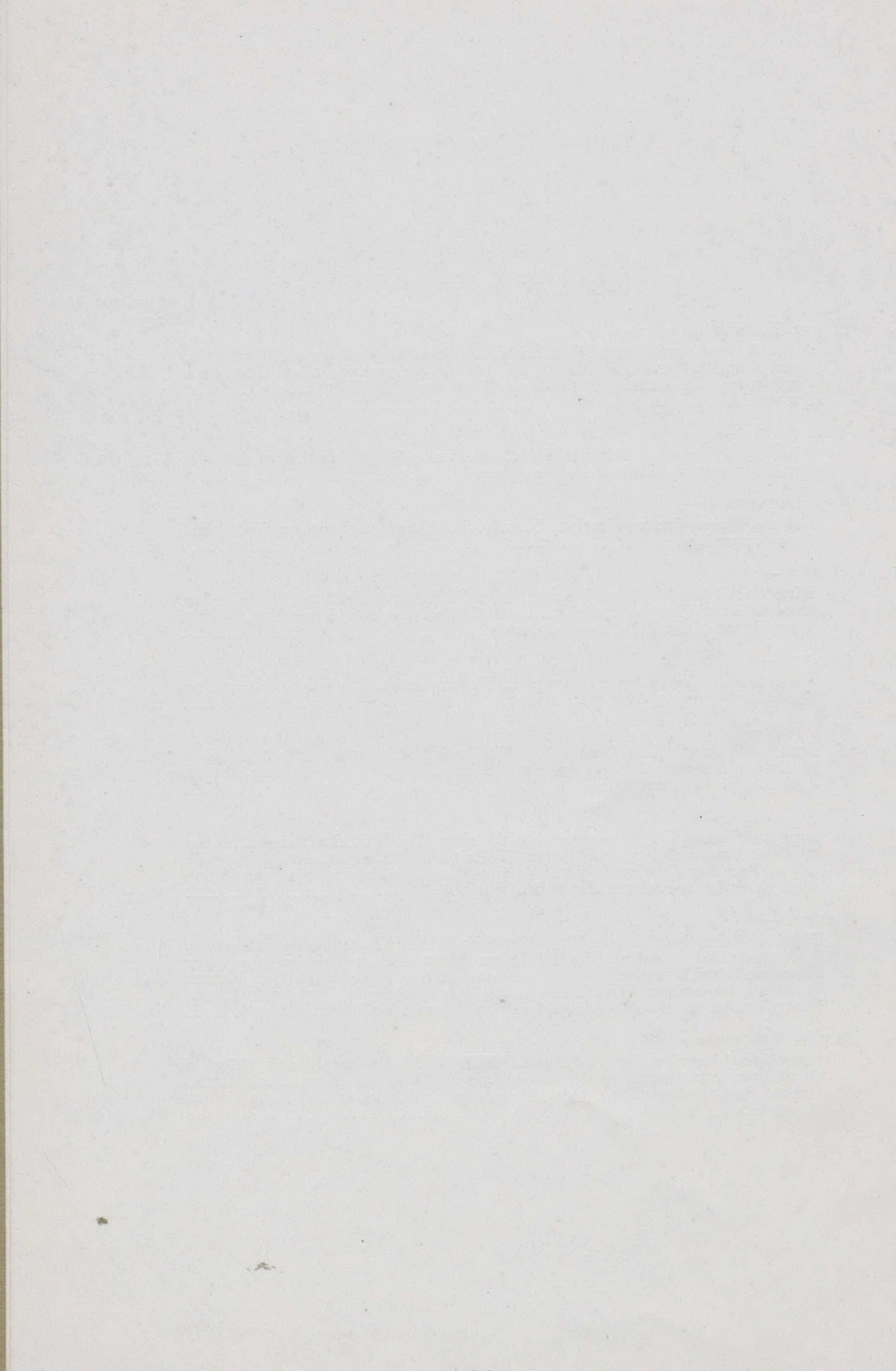
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To provide a concise account of the agricultural industry of Canada, a representative of the Minister of Agriculture for each province consented to deal with his respective province in a descriptive article for The Agricultural Gazette. The series, which began in the May number for 1916 and continued to the end of the volume, dealt with the area and character of the agricultural lands, the history and development of the farming industry and the outlook for its future growth. By the authority of The Honourable Martin Burrell, Minister of Agriculture, the series is here reprinted as Pamphlet No. 4 of The Publications Branch.

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AGRICULTURE IN CANADA

PRINCE EDWARD ISLAND

BY W. R. REEK, B.S.A., DIRECTOR OF AGRICULTURAL INSTRUCTION

PRINCE EDWARD ISLAND, the "Garden of the Gulf", though the smallest of the provinces, with an area of 1,397,991 acres, has compensation for its smallness in size in the great potentialities of its soil and climate. The soil is exceedingly fertile and responsive; the uncultivateable areas are negligible. The climate is such that seldom do we have crop failures owing to extremes over which we have no control; it is truly temperate. Small forest areas are prevalent in all parts, which supply the necessary lumber and wood; groves are numerous and scarcely can a homestead be found that does not nestle in one of these which affords protection in winter, and adds greatly to the beauty of the rural parts. Beautiful landscapes of green fields, birch and evergreen clumps and whitewashed buildings, a bracing atmosphere and an exceedingly hospitable people, cause the first impressions received by the traveller to be favourable.

A PROVINCE OF SMALL FARMS

It is a province of comparatively small farms. There are 14,369 holdings; those classified are: (1) between 100 and 200 acres, 3,227; (2) between 50 and 100 acres, 5,494; (3) between 10 and 50 acres, 3,849. There are a few larger

holdings, but as yet the general tendency is to keep between 50 and 125 acres to a farm. General agriculture is followed, with emphasis upon dairying, because the climate is ideal for the production of high class products; the pastures are generally good, owing to the rather high precipitation; the soil suitable for raising the foods essential for the dairy cow; springs are numerous, which ensures an abundant supply of fresh cool water; the factories are well established, and the labour question was never serious, until the war came. Because 90 per cent of the people are engaged in agriculture, the contingents principally came from rural districts.

THE PRINCIPAL CROPS

Hay, oats, turnips and potatoes are the principal crops, whereas wheat, barley and mangels are grown in rather small areas as yet. The Banner oat has already made a reputation for the Island; many thousands of bushels are supplied to the Eastern Provinces yearly for seed purposes. Nearly every farmer grows potatoes as a commercial commodity. The blue potatoes are the favourite, because the maritime markets such as Sydney and Newfoundland, demand large quantities, but the white varieties are gaining and doubtless will continue

to do so as the markets become extended. The "Old Island Two-Rowed" barley is a promising variety; it accommodates the farmer by dropping its awns in the field when ripe. Clover is gradually replacing timothy.

The soil is a red, sandy loam, with occasional stretches of heavy clay or sand, rather easy to cultivate and very responsive to proper

the cost of tile made under-drainage appear an economic impossibility. The peaty areas may be of value at some future time. The blueberry barrens and cranberry fields produce heavily, and are not to be despised, because the markets in the New England States and the Eastern Provinces will consume all that can be gathered with the available labour.



A VILLAGE HOME

The white birch trees are native and greatly add to the beauty of the province.

treatment. In many parts, which is true of all the Maritime Provinces, a slight acid state is prevalent, but is corrected by an application of mussel mud or lime. All wet soils can be easily drained; land drainage is in its infancy, but the building of a tile plant will bring about the reclamation of every unreliable or swampy area for a reasonable expenditure, because expensive outlets are unnecessary. Previously,

TOPOGRAPHY AND PRODUCTION

The contour of the land in King's and Queen's counties is gently undulating, allowing excellent drainage, but not causing any large areas of waste land, whereas in Prince county the flatter and wetter areas are prevalent and in a few districts the heavy clays are present, but generally sandy loams prevail throughout.

The production of small seeds,

such as turnip, mangel, clover and others, is as yet practised on a small scale only, but every indication points to an excellent future—the seed is good and the season quite suitable.

Tree fruits are grown in restricted areas only. Several years past, many purchased nursery stock and the orchards were generally well cared for, but some were disappointed to find, when bearing time arrived, that often inferior varieties had been purchased. A depression in orchard-ing naturally resulted. However, some are producing apples of ex-

cellent quality, but the growing of apples commercially on a large scale requires careful consideration. Small fruits, such as the strawberry, raspberry, gooseberry and currants can be produced successfully and marketed with decided advantage, because of the superior quality and rather late ripening season which eliminates competition on the larger markets from many outside districts.

TOTAL CROP PRODUCTION

The following table will give an idea of the crop production:—



PRINCE EDWARD ISLAND SOILS PRODUCE LARGE CROPS OF BANNER OATS

Crop.	Aver. 1909-14.	Yield 1914	Yield 1915	Value 1915
Wheat	533,000 bus.	550,000 bus.	600,000 bus.	\$ 720,000
Oats	6,368,400 "	7,250,000 "	6,500,000 "	3,120,000
Barley	156,800 "	160,000 "	130,000 "	100,000
Peas and Beans	11,800 "	15,000 "	12,000 "	30,000
Buckwheat	88,400 "	90,000 "	80,000 "	60,000
Mixed Grains	558,400 "	600,000 "	480,000 "	275,000
Potatoes	6,000,000 "	6,000,000 "	3,750,000 "	2,125,000
Roots	4,268,800 "	4,200,000 "	4,000,000 "	700,000
Hay	260,000 tons	300,000 tons	300,000 tons	4,000,000
				\$11,130,000

Averages per acre are as follows:—

Wheat.....	19	bus. per acre.
Oats.....	38	“ “
Barley.....	27	“ “
Potatoes.....	200	“ “
Hay.....	1 ½	tons per acre

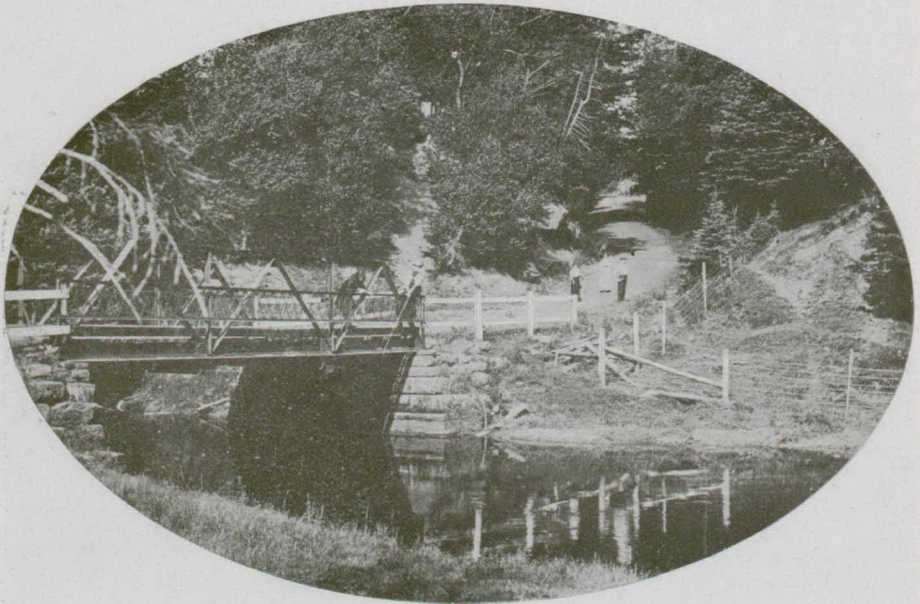
The value of dairy products for 1915 was \$478,764.53.

SEAWEED AS A FERTILIZER

Islands, and most particularly those surrounded by ice for a season, may have drawbacks, and doubtless Prince Edward Island has suffered,

manures. Probably the greatest sea manure available is the mussel mud. This is deposited in all the bays and estuaries at the river's mouths and is a product of the oysters, mussels and clams. The decaying shells give large percentages of lime and in addition there is some ammonia, potash, and vegetable matter. Twelve to fifteen tons per acre are applied.

The digging and distribution of the mud, on a large scale, has been undertaken by the provincial Government, and this is proving a great



BRIDGE AND ROAD AT BONSHAW, P.E.I.

but the advantages accruing very often more than counter-balance the disabilities. On every shore, whether it be an arm of the sea penetrating the land, or just the ordinary sea-shore, large deposits of seaweeds such as dulce, kelp and eel grass, are to be found and are gathered in quantities by every farmer within hauling distance. The value has not been, and probably cannot be, estimated, but the high state of fertility of those farms is unquestionable evidence of the importance of sea

boon to all the people within easy reach of the railway. It is delivered at cost.

STORY OF THE ISLAND

The Island was ceded to Great Britain by the French in 1763. The Indians called it "Abegweit"—"Cradled in the Waves." The British divided the Island into townships, or lots of about 20,000 acres, and gave them to public men upon the condition that they undertook to place a number of settlers upon the

land. The early settlers were English, Scotch, Irish and French. Practically no immigration has taken place of late and probably in no other district in America was a superior class of people to be found. All were of good ancestry and were worthy descendants. The lure of the New England States and of the West depleted the population very much and many of the ablest migrated and many prospered in their new homes. Probably no other settlement of people has wielded a greater influence in the development of America.

In 1875 the Government bought

should cease, and Prince Edward Island become in reality a part of the Dominion.

Governor Ready in 1827 was responsible for the introduction of agricultural organization, but agricultural societies were formed in 1855 and the former ceased to exist. A stock farm was established in 1866 and large numbers of superior stock were distributed throughout the Island. To-day that large, roomy, Shorthorn cow of excellent quality can be found which traces back to the early stock farm. Several subsequent changes were made and finally



A PASTURE SCENE IN PRINCE EDWARD ISLAND

out the landlords and the tenants became the owners of the land. Absentee landlordism had not been conducive to progress.

PROGRESS OF AGRICULTURE

Agricultural development was greatly retarded, because of poor communication with the mainland, which doubtless accounted for the loss of so many settlers. However, the present arrangements are much better than those of a few years ago, and when the car ferry commences operations the transportation difficulties

the farm was handed over to Falconwood asylum. Dairying received its great impetus from Dr. James W. Robertson in 1891, when co-operative factories were established, forty of which are still in operation. During the last few months great improvements in plants and output have taken place.

A regular Department of Agriculture was organized in 1901. Farmers' institutes were organized as in other provinces. Owing to lack of funds the major portion of the work was carried on by the Secretary for Agriculture.

THE AGRICULTURAL INSTRUCTION ACT made possible a much more vigorous campaign and new activities were undertaken.

Women's institutes were organized and the people very eagerly engaged in the new work, with the result that 35 active institutes were formed. Red Cross and similar work has been carried on since the outbreak of the war. Short courses are attended by women from the country and accommodation for the numbers applying is the greatest problem.

AGRICULTURAL EDUCATION

The teaching of elementary agriculture and nature study in the public schools has received considerable attention, and, to properly train the prospective teachers, a department has been fitted up in the Prince of Wales College, and a teacher with a normal training and an agricultural education is regularly employed.

All branches of agricultural work are now being undertaken, as in other provinces, though on a smaller scale. Particular effort is being made to assist those people who own the low, wet land in order that underdrains may be installed and open ditches built.

MIXED FARMING ENCOURAGED

The Island will continue to be a mixed farming district, with dairying

the most prominent branch and sheep raising following closely. The production of pork is now on the upgrade but must continue as an adjunct to the dairy industry. Few realize the immense value of the poultry products, and, with a province of small farms, the possibilities are almost beyond comprehension. More particularly is this so because in no other branch of agriculture is so much intelligent effort being applied. Climate, soil, markets, and an inclination on the part of the people, ensure the future of the small fruit industry.

OPTIMISM EXEMPLIFIED

The improved transportation facilities have engendered optimism and a greater faith in the possibilities is becoming crystallized into definite activities, not in agriculture only but in the development of other natural resources which have lain dormant for generations. Probably, never before, was the future so promising. The necessary essentials, which must enter into the upbuilding of prosperous communities, are all in evidence, and all forces are silently, but, nevertheless, surely, working together. The ultimate outcome cannot be otherwise than that Prince Edward Island will be more widely advertised and conceded to be the "Garden of the Gulf."

NOVA SCOTIA

BY M. CUMMING, B.A., B.S.A., SECRETARY FOR AGRICULTURE

Area of Nova Scotia.....	13,483,671 acres
Owned by farmers.....	5,260,455 "
In forests.....	5,750,000 "
In barren lands.....	2,276,000 "
Unissued.....	196,116 "

FARMERS' LANDS

Under the plough.....	1,257,459 acres
Pasture land.....	2,002,996 "
Total cleared.....	3,260,455 "
Wood lands.....	2,000,000 "
Total.....	5,260,455 acres

IT is estimated that 60 per cent of the lands of Nova Scotia, equal to 8,090,000 acres, could be tilled. The remaining 40 per cent is composed for the most part of granitic and slate rock formations which constitute the greater part of the southern half of the province, (Cambrian era) and more or less rocky areas scattered throughout the province. The part which could be, but is not, tilled now is composed mainly of forest area. Until manufacturing and other industries develop sufficiently to give a larger local market, it is better to leave these lands in forests and to centre attention upon the improvement of the already cleared areas.

HISTORY

Agricultural development of the province commenced at the French colony at Port Royal (now Annapolis) in 1605, from which time until 1755, when the expulsion of the Acadians occurred, practically all the farming in the province was carried on by the French. It is interesting to note that the first wheat raised and ground in America was at this place. Subsequent to 1755 there were four main lines of settlement:

1. The returned French settlement occupying the coast areas along the Bay of Fundy on the north-western shore of the province and similar coast settlements

along the north-eastern and south-western shores of Cape Breton.

2. The German settlement of Lunenburg, dating from 1751 (now one of the most loyal and progressive peoples in the province).

3. The settlement from the New England states, beginning about 1760 (following the expulsion of the Acadians) and augmented by the Loyalists, 1775-83. These people settled the vacated lands of the French in the western half of the province as well as various localities along the South Shore and in the east.

4. The colonization from Great Britain, commencing with grants of land given to disbanded regiments (principally Highland) about 1769, whose favourable report brought a further large influx of their countrymen, who continued to come in quite large numbers until about 1830. Since that time there has not been a large influx of outsiders into the province.

The main lines of settlement as described in the foregoing are for the most part well preserved and easily recognized by anyone who is familiar with the province.

So far as organized agriculture is concerned the most important events were:

1. The letters of Agricola (John Young) published 1818, which paved the way for the development of improved methods of agriculture and for the organization of agricultural societies, which are still a prominent feature (now numbering 247) of Nova Scotian agriculture. Twenty-five of these societies were organized by 1820. The King's County Agricultural Society, still in existence, was organized in 1789 (I understand that there is only one agricultural society in America, in the state of Pennsylvania, older than the King's County Society).

2. Organized agriculture and the agricultural societies were placed under the control of the Central Agricultural Society at Halifax in 1819.

3. Control was placed in the hands of a provincial Board of Agriculture in 1864.

4. In 1884, the office of secretary for agriculture was created and the control of these organizations placed under that office.

5. In 1885, a chair of agriculture was established in connection with the provincial Normal College and in 1888 the nucleus of the present Agricultural College property was purchased and the Nova Scotia School of Agriculture, then a faculty of the Normal College, was erected.

6. In 1893 a School of Horticulture was established in Wolfville.

7. In 1905 the School of Horticulture and the School of Agriculture were united into the present College of Agriculture at Truro.

8. The Nova Scotia Fruit Growers' Association, the parliament of the fruit growers of Nova Scotia, was organized in 1861, and the Nova Scotia Farmers' Association, the parliament of the general

inches in comparison with about one-third of that amount in parts of Canada.

2. The temperature is free from extremes. Springs are often delayed and the season, except in parts of the Annapolis Valley, is in general too short and too cool for such crops as corn, peaches, etc. A study of the census tables of the Dominion of Canada shows that the average yield per acre in Nova Scotia surpasses the average yield for the whole Dominion of Canada in hay, roots and potatoes. It compares favourably though falling somewhat lower in cereal crops.

3. No province in the Dominion has better transportation facilities.

4. While the province is in general suited to general farming it has a great asset in the



A NOVA SCOTIA HARVESTING SCENE

farmers of the province, was organized in 1895, and the Nova Scotia Dairymen's Association was organized in 1912. These bodies have been pioneer bodies in developing many phases of the agricultural policy of the province.

9. The establishment of the Dominion Experimental Farm at Nappan in 1888 and the establishment of a Dominion Experimental Fruit Station at Kentville in 1910.

Annapolis Valley, one of the finest fruit farming areas on the continent.

5. Nova Scotia has from 50,000 to 100,000 acres of dyke marsh lands along the Bay of Fundy of extreme fertility.

6. Diversified forms of employment are open to everyone, a matter which militates against the highest development of agriculture but ensures a livelihood for everyone.

AGRICULTURAL ADVANTAGES OF THE PROVINCE

1. Serious droughts never occur and general crop failure is unknown. The annual average precipitation is about 40

THE OTHER SIDE OF THE QUESTION

The soils of Nova Scotia are of just average fertility, neither very rich nor yet very poor. The average of some 200 analyses recently

made at the College of Agriculture, Truro, indicates amounts of nitrogen, phosphoric acid and potash just about equal to the amount which the late English chemist, Warrington, and the American chemist, Snyder, considered should be found in an average fertile soil. In general the soils are slightly below average in their content of lime and organic matter.

A consideration of all these matters points to the necessity of livestock

ducts of the farm is carried on to the detriment of the soil.

So far as live stock is concerned the biggest returns are to be made from dairying and from sheep raising. The humid conditions, favouring as they do the growth of grasses and other succulent crops, are especially favourable to these classes of live stock.

Fortunately dairy farming is making progress, a fact well established



APPLE-PICKING IN AN ANNAPOLIS VALLEY ORCHARD

farming combined with systematic rotation of crops as the right kind of farming for the greater part of the province, for it is this kind of farming that will keep up the organic matter of the soil. While this is the case, however, the fact remains that although the most successful farmers follow this practice, yet in many parts of the province the practice of growing and selling hay especially, and to some extent, other crude pro-

ducts of the farm is carried on to the detriment of the soil. So far as live stock is concerned the biggest returns are to be made from dairying and from sheep raising. The humid conditions, favouring as they do the growth of grasses and other succulent crops, are especially favourable to these classes of live stock. Fortunately dairy farming is making progress, a fact well established

Agriculture, the whole Department of Agriculture and the recently organized Nova Scotia Dairymen's Association.

Sheep raising, for which the province is equally well suited, has made no such progress as dairying. Between 1871 and 1911 the sheep population of the province, in sympathy with the sheep population of the whole Dominion, decreased over 40 per cent. Since that time it has slightly increased, but the increase has not been in any sense commensurate with the possibilities. Beef raising except in the vicinity of the marsh lands has not been and does not promise to be as extensive an industry as the dairy. Hogs are increasing in sympathy with the dairy industry and poultry are increasing both in numbers and productivity.

Unquestionably, the future of the agriculture of the province lies largely along the line of a development of the dairy industry accompanied by a reasonable development of the other lines which will fit in with that industry.

FRUIT GROWING IN THE PROVINCE

Nova Scotia has a great asset in the so-called Annapolis Valley, which is really a series of valleys in the north-western half of the province about one hundred miles long by ten miles wide. Here the apple grows to perfection. Besides there are sections of the south shore and local areas elsewhere in the province where fruit growing can also be carried to a high stage of development.

While fruit was grown ever since the early French settlement in the seventeenth century, yet the industry did not begin to make rapid strides until the year 1880, at which time the export of apples was about

20,000 barrels. By 1911, this export had increased to over 1,500,000 barrels, and while there have been off years since then, when fruit production has fallen over 50 per cent, it is held that the ultimate possibilities are very much in excess of the present accomplishment. Apples are the principal fruit exported, but plums and cherries and the hardier varieties of pears all do well. Strawberries and the various small fruits grow to perfection not only in the valley but throughout the whole province. Peaches and grapes are grown only to a limited extent.

The outstanding advantages which the Annapolis Valley fruit-growers possess are:

1. Practically every fruit-grower owns in addition to his orchard fifty or more acres of land just as well suited to general farming as the lands in any other part of the province. Consequently the fruit farmer may also be a general farmer and can make a living whether fruit sells or not. From the standpoint of economics in the province, the writer hopes that this condition of affairs will always continue to exist, for it ensures ultimate prosperity among the fruit-growers no matter what may happen the fruit markets of the world.

2. Transportation facilities are extremely favourable, no other part of America having easier access to the seaboard and to the overseas' markets of the world.

RESUMÉ

A consideration of the foregoing must reveal to the reader the fact that the Nova Scotia farmer has only made a commencement. His reach far excels his grasp. There are ultimate possibilities as yet undreamed of and it is with respect to the realization of these that the farmers and fruit-growers of the province and the various members of the Department of Agriculture are now bending their very best efforts.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

NEW Brunswick, which is the largest of the three Maritime Provinces, lies mainly between the 45th and 48th parallels of latitude and the 64th and 68th degrees of longitude. It is almost square in shape and is surrounded on three sides by the ocean; on the north by the Bay Chaleur, on the east by the Gulf of St. Lawrence, and on the south by the Bay of Fundy. This gives it a larger coast line in proportion to its area than most continental countries possess. The area of the province is 27,985 square miles, or in round numbers 17,500,000 acres, about twenty-five per cent of which is occupied, with a population of 351,889, the holdings running from ten to three hundred acres.

HISTORY

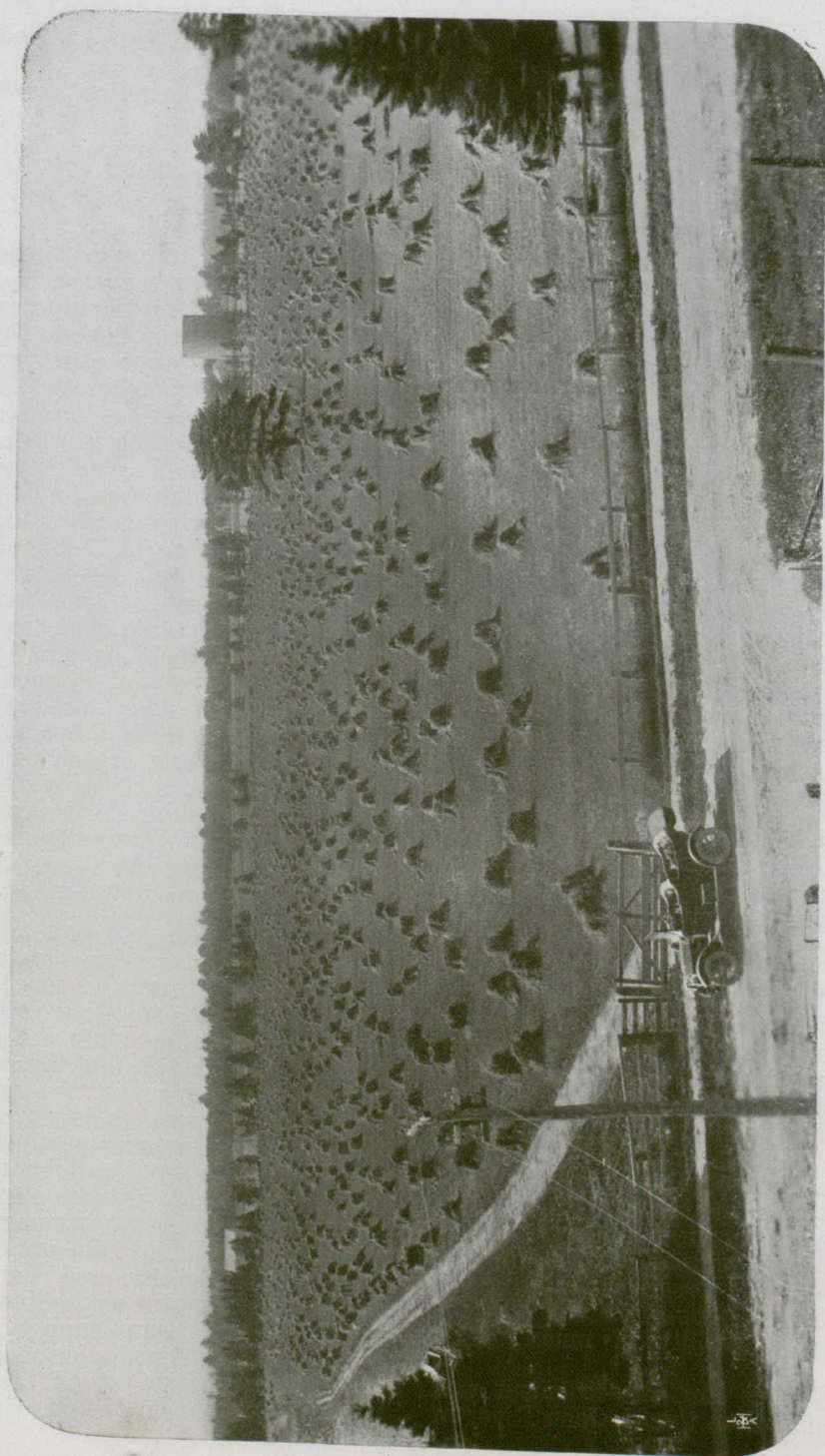
New Brunswick was first discovered by Jacques Cartier, a French explorer in the year 1534, but no attempt at settlement was made until the year 1604, when DeMonts and Champlain wintered on an island in the St. Croix River. It was for more than a century after this a French possession, being a portion of the province of Acadia, but, when Acadia passed to Great Britain under the Treaty of Utrecht, it formed a part of the English Province of Nova Scotia. During the French occupation the settlements were inconsiderable, and it had been a long time in possession of the English before much progress was made in settling it, notwithstanding the remarkable fertility of much of its soil.

The first English settlement was established on the St. John River in

the year 1762 at Maugerville, and about the same time a settlement was also founded at the mouth of the river. The people who came to New Brunswick at that time were from the colony of Massachusetts. At the close of the war of the American Revolution, large numbers of loyalists came to New Brunswick, and the city of St. John was founded. New Brunswick was separated from Nova Scotia in the year 1784, and since then has enjoyed a government of its own. After that time large numbers of immigrants came to it from the United Kingdom. Its people therefore are mainly descended from the loyalists and from immigrants from Great Britain, but there is also a considerable French population in the counties along the Gulf of St. Lawrence and in Madawaska. These people are the descendants of the ancient Acadians who were settled here more than two centuries ago.

WATER COMMUNICATION

In the earlier history of the province the rivers of New Brunswick supplied a means of passing from one settlement to another, but since the development of railways, and the construction of good roads, the river system has become less important. Steamboats ply regularly on the St. John River between St. John and Fredericton. There are also steamboats plying in the lower stretches of the St. John to Grand Lake and the Washdemoak, Belleisle and Hampstead, and to Hampton on the Kennebecasis. These boats supply admirable facilities for the farmers in reaching the market at St. John. Steamers also ply on the St. Croix



OATS IN STOOK, SNOWBALL FARM, CHATHAM, N.B.

between Eastport, St. Andrews and St. Stephen and on the Miramichi between Chatham, Nelson and Newcastle, also to points above Nelson and below Chatham. The city of St. John is connected by steamer with Portland and Boston in the United States, with Yarmouth, Digby and other ports in Nova Scotia and with the island of Grand Manan. Steamers also run in the Bay Chaleur between Dalhousie and Gaspe and to Prince Edward Island from Point du Chene.

CLIMATE

New Brunswick possesses a climate of exceptional healthfulness and there is no country in the world that is more free from epidemic diseases, or where people live to a greater age than in this province. The most northerly portion of New Brunswick is two degrees south of the most southerly portion of England, and the northern line of New Brunswick is almost a degree south of the latitude of Paris. The city of St. John is in the same latitude as Milan and Venice. The climate, however, differs very considerably from that of Western Europe and especially from that of the British Islands. It is free from humidity, so that the heat and cold are less felt than they are in a damp climate. The change from winter to summer is sudden, and the autumn is protracted and long drawn out, and is the most delightful season of the year. The winter of New Brunswick, when the ground is covered with snow for from three to four months, serves a most useful purpose in the economy of nature, as well as for the business of man. It is during the winter that the lumberman gets his logs together and places them on the banks of the rivers ready for the spring freshet. Without this season the business of lumbering would be far more costly than it is. The snow and frost also have a beneficial effect on the soil. Under the frosts of winter the soil becomes loosened and in a fit condition to receive the seed.

The winters of New Brunswick are healthful and much more favourable to delicate persons than a damp, chilly atmosphere. The summers of New Brunswick are delightfully warm, although not excessively so. Vegetation advances with rapid strides. Not only do wheat, oats, barley, buckwheat, and all kinds of root crops, grow to perfection in the climate of New Brunswick, but also maize or Indian corn, tomatoes and grapes. New Brunswick also produces in abundance apples and all kinds of small fruits.

TOPOGRAPHICAL FEATURES

New Brunswick is what has been described as a rolling country, which means that it is not a dead level like the prairie regions, neither is it mountainous as some portions of this continent are. It is full of hills and valleys, the valleys being very fertile. The highest land of the province is in the northern highlands. West of the St. John river, in York and Carleton counties, it rises into several peaks and ridges to a height of 800 or 900 feet, while the general level is about 500 feet. East of the St. John river the land rises to the watershed dividing the Tobique and other tributaries of the St. John from the rivers which flow eastward. Mountains and broken ranges cross this tract of land in all directions and reach the St. John valley in the vicinity of Mars Hill, which is 1,688 feet in height.

THE SOIL OF NEW BRUNSWICK

Half a century ago the Government of New Brunswick engaged Professor Johnston, a distinguished authority on agriculture and honorary member of the Royal Agricultural Society of England and author of lectures on agricultural chemistry and geology, for the purpose of obtaining from him a report with respect to the agricultural capabilities of the province. This report may be said to be the basis

of all the agricultural information which exists with reference to New Brunswick, although it has been supplemented by additional information which was not available at the time Professor Johnston visited the country. As no man could go over the country within the limited period allowed him for the work, Professor Johnston's estimate of the agricultural value of certain districts has had to be extensively revised. He divided the soils of the province into five classes: First, the soils of the very best quality consisting of river intervales, islands and dyked marsh lands, of this he estimated the

Brunswick was quite inaccessible and its area was unknown. There is no doubt that the upland of the very first quality in New Brunswick can be safely estimated at 3,000,000 acres, a very large portion of which is still available for settlement. This land Professor Johnston estimated to be capable of producing two tons of hay or forty bushels of oats to the acre. The third class of soil dealt with by Professor Johnston was what he described as second class upland, that is, land capable of producing one and a half tons of hay or thirty bushels of oats to the acre. Of this he estimates that the province con-



NURSERIES IN NEW BRUNSWICK

province to contain 50,000 acres. This estimate, however, is much too low, and should be nearer 100,000 acres. The second class of land which he described consists of the best quality of upland and such portions of good intervale and marsh land as has not reached the highest point of productiveness. Professor Johnston estimated that the province contained a million acres of this land. This estimate, however, has been shown to be far too low. When Professor Johnston visited the province the splendid agricultural region in the northern portion of New

contains 7,000,000 acres. After this came third class upland, inferior in quality to the others, consisting for the most part of light, sandy or gravelly soil, hungry but easily worked, and lands covered with hemlock and other soft woods, which, although difficult to clear, were very favourable for certain crops when cleared.

Some years ago New Brunswick was visited by Professor Sheldon, then of Downton College, and a very practical English farmer, Mr. J. Sparrow. These gentlemen went over a considerable portion of the

province, including some of the new settlements, such as New Denmark, and were highly impressed with the availability from an agricultural point of view. Their reports on this subject are extremely valuable, as the views of persons wholly disinterested, and who were familiar with agriculture and agricultural methods as practised in the British Islands.

the improvement of seed, live-stock, etc. There are also 82 women's institutes, with a membership of 2,500. Ninety-five per cent of these are in the rural districts. The Provincial Government gives generous assistance in the work of the institutes.

Agricultural education is being carefully considered by the Government of the province, special attention being given to elementary agriculture. School gardens are being encouraged and generously assisted. During the summer months short courses are held at Woodstock and Sussex for the training of teachers in elementary agriculture. These courses are very largely attended. Special short courses are held at several points during the winter months; in fact, the entire winter is pretty much given to short course work. These courses are especially planned to meet the needs of those who cannot take advantage of the long courses at the regular agricultural colleges. This is the third year since the courses were instituted and they have been steadily growing in favour.



LIME ROCK CRUSHER IN OPERATION

The farmers of the province are organized into agricultural societies, under the supervision of the Department of Agriculture. There are at present 124 societies, with a total membership of about 9,000. An annual grant of \$16,500 is made by the Government of the province to the societies, which must be used in

The abundance of New Brunswick lands pre-eminently adapted to the successful production of the apple and other fruits, together with the unexcelled social and marketing facilities afforded by their geographical position, have of late years attracted a large amount of interest and favourable comment, and the

Department of Agriculture now feels that nothing short of a special publication, devoted exclusively to the orcharding opportunities in the province, will meet the requests for information being received from all parts of the world.

To men of moderate capital with a preference for fruit growing, or either of its kindred businesses, market gardening and poultry raising, New Brunswick offers special advantages. Such men feel that the price of land in the sections of Canada where fruit growing is of older establishment is altogether prohibitive, and they wish to locate more economically. From the fact that the province has not been exploited as a commercial orcharding country, she is able to offer many excellent farm properties, considerable proportions of which are well adapted to fruit growing, at prices ranging from \$20 to \$40 per

acre, according to the location, the state of cultivation, the percentage of land cleared, and the presence there-on of buildings, etc. Five, ten and fifteen-acre lots of choice fruit land cleared and ready for planting, and especially selected with reference to transportation facilities, etc. will cost from \$50 to \$100 per acre.

The northern part of the province is especially adapted to the growing of potatoes, a quality of potatoes being produced in that section which has found very special favour in both the American and Canadian markets.

During the year 1915 crops produced in the province were as follows:—

Buckwheat.....	1,085,449	bushels
Oats.....	5,841,850	"
Potatoes.....	8,384,591	"
Turnips.....	3,733,763	"
Wheat.....	268,899	"

QUEBEC

BY H. NAGANT, EDITOR OF THE JOURNAL D'AGRICULTURE

THE province of Quebec covers 703,653 square miles, or 450,337,762 acres, including New Quebec, formerly Ungava Territory, the annexation of which in 1912 has doubled the area of the province. It is the largest province of the Dominion.

According to the Census of 1911, the rural population of the province numbered 1,032,618 and the urban population 970,094 a total of 2,002,712. French-Canadians number 1,605,339 or 80.14 per cent of the total population.

The land occupied covers an area of 15,576,809 acres, of which 8,147,633 acres are improved (arable land). Out of this total, 5,204,874 acres are in forests, 560,889 in marshes, 5,399,223 in field crops, 63,216 in vegetables and 36,730 in orchards, nurseries, small fruits, etc.

There are 130,000,000 acres in forests.

Large areas are still open to the settler.

HISTORICAL NOTES

Samuel de Champlain, who had just laid the foundations of the city of Quebec (1608) expressed his faith in the agricultural future of Canada by saying:

"It will be a great grain and grass producing country; first of all it requires farmers."

As early as 1613, he wrote:

"We always had difficulties in haying during the last few years because hay was cut too late. To avoid this, I had the hay at Cape Tourmente cut in the month of August this year."

Cattle were imported in the first days of the colony. In 1626, Champlain established a farm at the foot of Cap Tourmente, for which cattle were sent from Quebec.

THE FIRST FARMER

But the first farmer settler who lived on the produce of the soil was Louis Hébert, an apothecary from Paris, who landed in Quebec in 1617 with his wife and children, and at once started to clear and cultivate the soil on what is now the site of the Cathedral of Quebec, of the Seminary and of this part of the Upper Town extending from Ste-Famille street to the Hotel-Dieu. At that time, that part of the city was called "Hébert's Farm". With a spade as his only tool, he worked and re-worked the soil, until it was ready to receive seed. He threw in the seed from France, planted apple and rose trees and, at last, saw undulating in the breeze, the golden ears, the flowers and fruits from his motherland. The third centenary of the landing of Louis Hébert will be commemorated in Québec in 1917,

and a citizens' committee has been formed to erect a monument to the first farmer of the colony.

The second pioneer in agriculture was Guillaume Couillard, Hébert's son-in-law, who is mentioned by Champlain as being possessor, in 1629, of seven or eight arpents of seeded land.

OTHER PIONEERS

Later came Abraham Martin, who also farmed for a living, 1643-1646,

In the district of Three Rivers, Pierre Boucher encouraged agriculture as Seigneur and as farmer. He claimed that all crops grew well and that he found in the gardens almost all the vegetables and many of the flowers known in Europe.

In Montreal, Pierre Gadois took possession, in 1648, of the land on which the Ste-Anne market is now situated and became one of the first habitants. Let us also mention among the first settlers the names of



RESIDENCE, BARN AND STABLES OF M. PAPHUS BONIN, STE. ELIZABETH, JOLIETTE COUNTY, QUEBEC

the land which was subsequently known as "Plains of Abraham", and which became (in 1759), the battle-field of the armies of Wolfe and Montcalm.

Another early pioneer, Robert Giffard, also gave his time to agriculture, and we are told that he grew large crops of wheat, peas and corn. So much for the Quebec district.

Maisonneuve, Simon Richomme, Blaise Guillet, Léonard Lucault, François Godé. The blood of these pioneers of agriculture still runs in the veins of a large number of Canadian families, who are proud to claim them as ancestors.

The land produced good crops: "Providence has so blessed our labours", wrote Reverend Mère de l'Incarnation, Supérieur of the Ursu-

lines at Quebec, in 1650, "that the land gives very good wheat and in sufficient quantity. The air is warmer now that the land is cleared and that those great forests which kept it so cold have been partly removed."

AGRICULTURAL ORGANIZATION

The agricultural organization of the province covers three phases of development:

Seigneuries.—As late as 1626 there was no regular system of colonization in New France and the system established on that date was based on what is called the "tenure seigneuriale", similar to that prevailing in old France, but modified according to the circumstances. Two hundred and fifty seigneuries were established under the French régime and four new ones under the English régime. This system, which lasted until 1854, facilitated the organization and the development of the rural population, by insuring its stability and by encouraging its grouping into parishes. At least forty-seven parishes were established between the beginning of the colony and the year 1700. At the present time 275 families are still living on land which was occupied by their ancestors before 1700, living witnesses after eight or ten generations of the energy of the first pioneers, who firmly attached themselves to the soil they had cleared.

Colonization of the Eastern Townships.—While the French-Canadian habitants had established themselves on both shores of the St. Lawrence the district more to the south, and now known as the Eastern Townships, was settled about the end of the 18th century by English farmers or settlers. This settlement, which was started in 1774, made some progress between 1784 and 1799, and great progress from 1800 to 1817, when the French element from the seigneuries came to establish themselves in proximity to the

English families which had formed the townships. In 1875, there were a large number of French-Canadians in 36 of the English Townships.

Settlement in our times.—New districts were opened by a third group of settlers, leaving the old settlements towards the middle of the 19th century. In this way were created the first establishments of Lake St. John and Chicoutimi in 1840, Lake Temiskaming in 1860, Matawan Valley in 1863, Matapedia Valley in 1870 and Lake Nominig in 1880.

IMPORTATION OF LIVE STOCK

It is very probable that the first cattle imported by Champlain in 1608 came from Normandy. The French-Canadian cattle, which are now found in pastures of the province of Quebec, came from cattle imported by Champlain. Boucher says:

"In 1663, oxen, pigs, sheep, dogs, cats, turkeys and pigeons were imported from France."

The first horse brought to Quebec in 1647 was presented to the governor, M. de Montmagny. Other horses sent by the King of France, Louis XIV, were forwarded in 1665, 1667 and 1670, and were placed, under certain conditions in charge of the habitants.

The Canadian horse of the 17th century was extremely popular for a period of 150 years, and was looked upon as the best horse in Canada. This was the cause of its disappearance, as the best stallions of the breed were purchased by Americans, only a small number being left, by means of which, however, the breed was reconstituted gradually, thanks to the efforts of enthusiastic agriculturists and of the breeders' association of the province.

Later importations.—The real breed of French-Canadian cattle has had a Herd Book since 1886. There are now in Quebec eight other breeds of cattle. Ayrshires

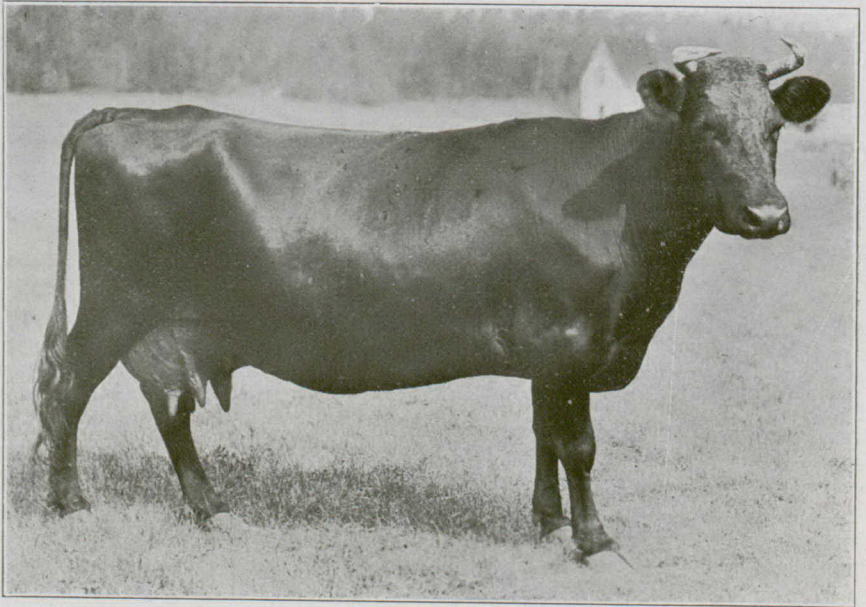
and Shorthorns were imported in 1830, Galloways and Herefords in 1850, Jerseys in 1865, Guernseys and Polled Angus in 1878 and Holsteins in 1881.

As to the horses, with the exception of the Canadian horse, the Clydesdales were imported in 1840, Percherons in 1855, Suffolks in 1868, Shires in 1883, Anglo-Normands, Normands and Bretons in 1889 and Belgians in 1902.

Up to the last forty years the Quebec farmer never kept enough

into the district of Montreal. After 1854, the Cotswolds made their appearance; in 1880, came the Shropshires and, later on, the Ox-fords and Lincolns.

Pigs.—Pigs of the Berkshire breed were imported into the Montreal district in 1835; until then there was only the common breed imported from France. The introduction of other foreign breeds, American and English, such as Chester-White, Essex, Poland China and Yorkshire, is due to the influence of the Board of



FRENCH-CANADIAN COW "FILLIE," 2130, A TYPICAL REPRESENTATIVE OF THE NATIVE BREED OF CATTLE OF THE PROVINCE

stock on his land. On the other hand, horse breeding was carried on to such an exaggerated extent that Intendant Raudot, in 1709, had to issue a decree with a view to reduce the number of horses and encourage the breeding of cattle.

Sheep.—In addition to the sheep already in the country, American immigrants brought with them grade sheep of various breeds. Towards 1850, Merinos, Leicesters and South-downs were imported from Ontario

Agriculture, established in 1853. The last breed introduced was the Tamworth, a bacon hog which appeared in 1895.

CULTIVATION OF THE SOIL

During two centuries and a half, the French-Canadian farmer followed a system which consisted in ploughing half the land in three consecutive years. The greater part of this ploughed area was seeded with cereals, a very small part was

planted in roots, and during these three years the other half was kept for the production of hay and as pasture for the live stock. The pasture was ploughed in the fourth year and the ploughed land was used as pasture for three years, and so on. Very little live stock was kept compared to the area of the farm; some cows and horses, a small flock of sheep and a few hogs and fowls. The small quantity of manure that was produced was applied to the root land. Potatoes, which are now

PERIOD OF TRANSITION

Writes Turcotte in "Le Canada, Sous l'Union:"

"When Canada passed under the English domination, French Canadians numbered about 65,000. They were left in a critical situation by the conquest. Most of them were ruined. They were abandoned by most of their leaders: nobles, influential citizens, officers, educated men, and they lost, owing to this compulsory or voluntary migration, an element of the population valuable by its knowledge and experience. However, they were not to be discouraged. With the help of the Cath-



THE ORCHARD AND APIARY OF M. LUC DUPUIS, VILLAGE DES AULNAIES, COUNTY L'ISLET, QUEBEC

grown in large quantities, were long unknown and were grown for the first time in 1758.

This system was not very scientific, but the soil of New France was so rich that for over a century the Quebec farmers had good crops. Grain, roots and hay were always in abundance and in 1749 they were exported by Quebec merchants. At the beginning of the colony the agricultural industries were flax and wool for clothing, butter, cheese and maple sugar.

olic clergy they isolated themselves from their conquerors and by this fact, from the rest of the universe, to cultivate their devastated lands and worked with energy to repair their losses."

They belonged to a strong and healthy race, these farmers whom the English General Murray admired, in 1762, and whom he found virtuous in their morals and temperate in their mode of living:

"They will become good and faithful subjects of His Majesty and the country in which they live will be before long a rich and valuable colony of Great Britain."

But these valiant farmers resisted all attempts of absorption on the part of their conquerors, and the second English governor, Carleton, writes to Lord Shelburne:

"The Canadian race is so prolific that it will eventually populate this country to such an extent that any other people that will be brought to Canada would be entirely absorbed, except in the cities of Quebec and Montreal."

For almost a century, agriculture, hampered by isolation and the lack of agricultural organization, could not make appreciable progress. In 1850 it was still limited to the growing of cereals without fertilizers and to the growing of hay in meadows that had been seeded to grasses or clovers. The soil which had been so fertile still gave crops, but in decreasing quantity every year, as no manure was ever applied.

Our governors and legislators were too much engrossed by the serious political events which took place almost continuously from 1760 to 1845 to give any attention to agriculture. In 1845, there was, as yet, in the province of Quebec, no organization whatever to protect or encourage the interests of the agricultural community.

In 1847, the government, realizing the great needs of the industry, introduced in the legislature the first bill concerning agriculture. By this law the formation of agricultural societies was authorized, the government agreeing to give subventions amounting to three times the amount subscribed by the members of these associations. This money was to be used as prizes at fairs or used for the importation of live stock and to purchase improved seeds. However, these associations, left to themselves and lacking experience and direction, did almost nothing.

Five years later (1852) a law was passed creating the Department of Agriculture, the Board of Agriculture, and authorizing the establishment of schools of agriculture and model farms. But the most useful

work of the Board of Agriculture (which became the Council of Agriculture in 1869), in addition to a few improvements from 1853 to 1880, was the encouragement given to the breeding of Ayrshire cattle and to the improvement of the breeds of pigs, (Dr. J. A. Couture, Quebec, 1908).

But, after all, if agriculture had not made very marked progress, work was going on preparatory to a more rapid progress which, for the last forty years, has not been checked and has taken, specially during the last few years, a magnificent development, in all the branches of farm husbandry.

TO-DAY

The province of Quebec now has a model agricultural organization and we are witnessing with confidence the development of the resources which Divine Providence has sown with such a lavish hand on our magnificent country, and which only requires the persevering efforts of our rural population to reach a full development.

VALUE OF THE FIELD CROPS OF THE PROVINCE FOR THE YEAR 1915

Wheat.....	\$ 1,891,000
Oats.....	23,200,000
Barley.....	1,939,000
Rye.....	162,000
Peas.....	998,000
Beans.....	327,000
Buckwheat.....	2,157,000
Mixed grains.....	2,188,000
Flax.....	15,000
Seed corn.....	569,000
Potatoes.....	9,631,000
Turnips, etc.....	1,132,000
Hay and clover.....	58,507,000
Fodder corn.....	1,872,000
Alfalfa.....	95,000

Total value of crops.....\$104,683,000

This regeneration of agriculture in the province of Quebec, and the prosperity which it now enjoys, are due in a large measure to the development of the dairy industry.

The production of milk which, in 1900, was valued at \$21,000,000,

amounted to \$31,000,000 in 1910 and had reached in 1915 an approximate value of \$35,000,000, or an increase of \$1,000,000 annually.

According to Mr. G. E. Marquis, chief of the Quebec Statistical Office, the creameries and cheese factories of the province manufactured in 1915, butter and cheese valued at \$17,302,400.

THE CLIMATE OF THE PROVINCE

Considering the climate and the length of the season, the province of Quebec may be divided into three districts: one extending from Gaspé to Rimouski, another one from Rimouski to Three Rivers and the third from Three Rivers, towards the West, to the frontiers of the province in the county of Soulanges. The first district has a very damp climate owing to its proximity to the Atlantic Ocean and the temperature varies between 30 and 80 degrees F. The land can be worked only from the 20th of May to the 15th of October (about five months). In the second district the season is much longer (six months) and the temperature varies from 30 to 90 degrees F. The third district has the largest variation of temperature (27 to 93 degrees F.), and the longest season of cultivation, from April 20th to November 20th (seven months).

The rigour of the Canadian climate is no obstacle to the growing of grain, fodder plants, roots and fruit; quite the contrary. The province of Que-

bec has an exceptional productivity; breeding operations are in no wise hindered by the snow; the cattle have a remarkable strength, which, to a great extent, wards off contagious diseases. Snow gives the land an absolute rest; in the spring, water from the melting snows permeates the soil and prepares it for a rapid and healthy growth.

CONCLUSION

It has been said that this province is the country of milk, sugar (maple sugar) and honey; to this may be added the fact that the soil and climate are also favourable for the breeding of all farm live stock (cattle, sheep, pigs, fowls, etc.), for which almost unlimited markets are open. From this point of view, the province of Quebec possesses immense resources still undeveloped.

Our rural population, intelligent and active, helped and encouraged by the efforts of the provincial Department of Agriculture, progresses continuously and brilliant prosperity may be hoped for.

N.B.—In the preparation of these notes, I consulted the works of several competent authors such as those of the Rev. Ivanhoe Caron, Agricultural Missionary, Mr. G. E. Marquis, chief of the Quebec Statistical Office, and specially the "Three Centuries of Agriculture" (published in one of the volumes of "Canada and its provinces") by Mr. J. C. Chapais, Assistant Dairy Commissioner.

ONTARIO

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

TO visualize the extent of the province of Ontario a few comparisons may be helpful. In the first place take the British Isles and multiply them by three and one-half, or take France with its wealth and resources and multiply its area by two, or even take Germany and double its size, and you

ican Republic. With these geographical comparisons in mind then it can be appreciated that the entire extent of the province is slightly over two hundred and sixty million acres. Of this, of course, comparatively only a small portion is as yet developed. A very large amount, probably over thirty million acres,



A TYPICAL ONTARIO FARM SCENE

still have an area which is smaller than the aggregate area of the province of Ontario. For comparisons on our own continent it would be necessary to take nine or ten of the average Eastern States of the Amer-

is covered by great lakes and some of the larger timber reserves. The section of the province which is usually referred to as Ontario and which includes a great bulk of the population represents about twenty-

five million assessed acres, of which about fifteen million acres are cleared. There is in addition the vast region known as New Ontario, which includes the clay belt, which alone is estimated to contain twenty million acres. This is now being opened up and there is no doubt but what there are agricultural possibilities as yet untouched far greater than what have so far been developed. This gives scope for work for years to come, but the purpose of this article is to outline what has been accomplished rather than attempt to unfold the future.

ought else. Accordingly they left their homes and everything almost that they possessed in order to live in British territory. Immigration continued very slowly at first but after the European wars of 1816 a considerable flow of immigration from the British Isles started this way. Included among these were many of the very best types of English, Irish and Scotch blood, and to these men, together with the United Empire Loyalists of the earlier days and their respective descendants, is due the enduring credit for having laid so well the foundations of this



A FARM SCENE IN NEW ONTARIO

EVOLUTION OF THE PROVINCE

It is not yet a century and one-half since even the best settled sections of Ontario were but a vast forest, tractless, except for the trail of the Indian. It was British territory, however, and when the American War of Independence wrenched the English settlers along the Atlantic coast from beneath the British flag, there were ten thousand or more sturdy Britishers who thought more of their British connection than of

province.

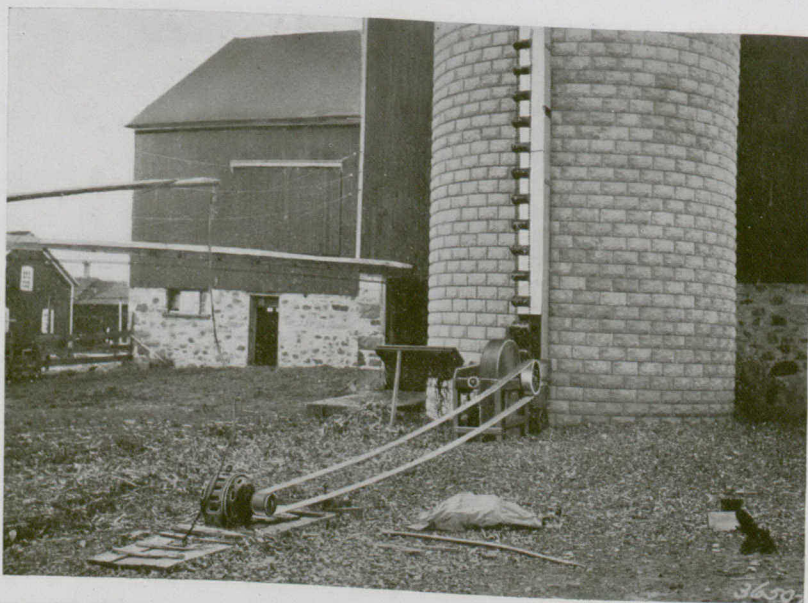
STAGES IN DEVELOPMENT

There is no doubt but that Ontario, or Upper-Canada, as it was then called, had many attractions for the settler even in its early days. Its soil was fertile, its land was rolling, rivers and lakes abounded everywhere and there was a variable conformation which was also attractive. Even the sturdy forests did not daunt the stout hearts of the rugged pioneers.

Then too it was practically the last West available to adventurous spirits, for in those early days few had dreamed of the possibilities of the prairies beyond. The first settlement was along the lakes and rivers which constituted the means of necessary transportation. Gradually the forests were pushed farther back and still better homes arose, and to-day, if one would picture the development which has taken place, one must place on one side the almost unbroken forest of a century ago, and on the other side the nearly

for his family, against the picture of the farmer of to-day who in his new automobile speeds gaily over the same twenty-five miles of road in a little more than an hour. To this scene of rural Ontario must be added the scores of prosperous and progressive towns and cities which are dotted every few miles and play their part in serving the provincial communities as well as the great country beyond.

The population of Ontario has shown a steady and uninterrupted increase. What fluctuations there



ELECTRICITY FOR POWER AS WELL AS LIGHT IS BEING ADOPTED ON MANY ONTARIO FARMS

two hundred thousand splendid farm homes and buildings, reached by fifty-five thousand miles of rural highways and served by three thousand miles of steam railways and about five hundred miles of electric railways, and equipped with approximately eighty-five thousand rural telephones. To this contrast one is also tempted to add the contrast of the early pioneer, who shouldered a bag of wheat on his back and trudged twenty-five miles to the nearest mill, taking the flour home to make bread

have been as to the rural and urban distributions! At first of course, it was almost entirely rural, but when the clearings assumed even small proportions villages and towns began to spring up. In 1871 the rural population represented 80.6 per cent of the whole and in 1881 it represented 77.2 per cent. The rural population reached its highest in 1881, and between that time and 1891 there was a slight decline. The rural population in the last census was one million two hundred and

ninety-five thousand three hundred and twenty-three(1,295,323) against eight hundred and eighteen thousand nine hundred and ninety-nine (818,999) urban. In the early nineties there was a slight trend to the West and this gained in volume in the latter part of the nineteenth century and early part of the twentieth.

the low prices of agricultural produce created an economic condition which made the openings of the West look specially attractive. As the tide flowed to the West another economic factor developed. The West being largely agricultural, it required to be clothed and fed on other things than cereals and consequently there was



SHADED ROADWAYS LIKE THIS MAKE ONTARIO LANDSCAPE PICTURESQUE

Along with these Western opportunities, mechanical inventions lightened farm work so that fewer men were actually required on the land. Furthermore, the number of men on the land in Ontario was out of proportion to the number of consumers in other pursuits, and, consequently,

a market created for the products of Ontario factories, and these in turn created a demand for help in Ontario factories to supply the Western needs.

Rural Ontario from 1891 to 1911 contributed about one hundred thousand (100,000) of her sturdiest and best sons and daughters. The rural

population as disclosed in the last census of 1911 was one million one hundred and ninety four thousand seven hundred and eighty five (1,194,785), as compared to an urban population of one million three hundred and twenty eight thousand four hundred and eighty nine (1,328,489). Hence the balance was entirely changed and the result was an improvement in market conditions and better prices for agricultural produce. The decrease in the rural population, however, is worthy of

The early settlers laid the foundation of the live stock industry by bringing out to Ontario some splendid specimens of horses, cattle, sheep and swine which flourished in the old land.

At the same time it must be noted that in early years growing of both fall and spring wheat and barley as cash crops was a general practice. Looking back over twenty-five years only it is interesting to note the changes which have taken place in this regard. While the change in regard to fall wheat is not so notice-



SEEDING OPERATIONS ON AN ONTARIO FARM

special note in the subsequent consideration of the produce of the province which, notwithstanding this fact, has shown material increase.

EVOLUTION IN FARMING

Favoured by conditions of soil, water, climate and intelligent farmers the products from Ontario farms have always set a high standard. Even from the early days live stock constituted a branch of activities and this province has never been so entirely given up to grain growing as have some of the newer provinces.

able, there is on the whole a striking decrease in the acreage devoted to wheat and barley, and an equally striking increase in the acreage devoted to oats, corn, hay and clover, as well as roots and mixed grains for feeding. Along with this there has been a steady increase in the number of live stock, and there has been an entirely beneficial tendency to feed the stock of the farm on the farm and to sell the finished article on the market. The following figures as to acreages in 1890 and 1914 may be of interest:—

	F. Wheat	S. Wheat	Barley	Oats	Corn	Hay and Clover
1890.....	720,101	601,753	701,326	1,882,366	223,836	2,462,002
1914.....	685,692	118,607	579,473	2,776,883	708,922	3,415,484

Along with this it is interesting to note the increases in live stock over the twenty-five year period. Of course there have been fluctuations from year to year in that time, but the following figures tell the story:—

generally to beef cattle, but herds of beef cattle and swine may be found in every county.

There is now in the province a fruit industry which represents possibly twenty million dollars annually, and



A PICTURESQUE SCENE, BUT ALSO SUGGESTIVE OF THE WEALTH OF ONTARIO'S DAIRY INDUSTRY

	1890	1915
Horses.....	659,636	779,131
Milch Cows	777,838	1,022,518
Other Cattle	1,116,874	1,652,228
Swine.....	1,140,559	1,769,295
Sheep.....	1,339,695	908,095
Poultry.....	6,854,864	14,273,091

SPECIALIZED FARMING

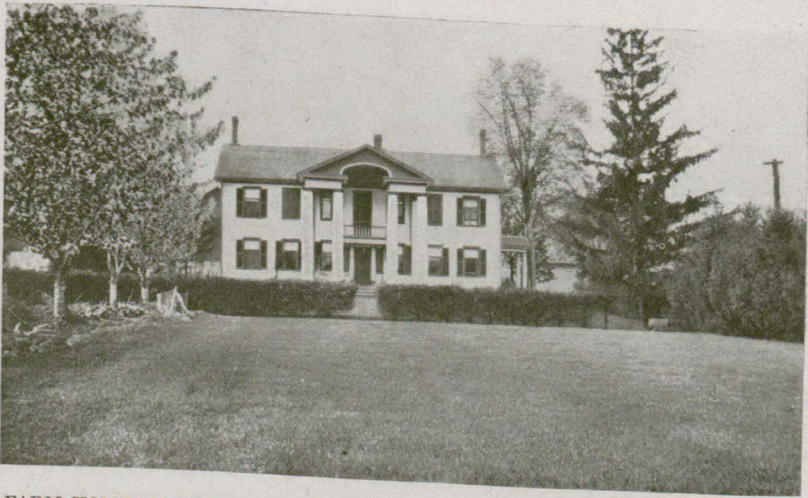
Practically all parts of what is known as Old Ontario are now engaged in mixed farming with most farms having some line on which they specialize. Dairying is adopted very generally in Eastern Ontario, where there are nearly nine hundred cheese factories, and in Western Ontario, where there are a large number of creameries and a few cheese factories. In the more northerly counties, districts are devoted more

to a vegetable industry which aggregates several million dollars. Fruit growing has flourished in Ontario and 75 per cent of all the fruit in the Dominion is grown in this province. This includes 99 per cent of the peaches and grapes, 60 per cent of the plums, 70 per cent of the apples and 80 per cent of pears and small fruits. The peach-growing areas are located for the most part in the Niagara district skirting Lake Ontario as far west as Niagara, but new and promising districts are now being developed in Norfolk, Essex, and Lambton counties. The Niagara district is also the large vineyard of the province, but plums and apples are grown in most sections. The special apple sections, however, are in Western Ontario, especially

along Lake Erie and Lake Huron and north as far as Georgian Bay, and in Eastern Ontario along Lake Ontario and the St. Lawrence, including in the latter Dundas county, which is the native home of the famous McIntosh Red apple, now commemorated by a monument marking the place where the first McIntosh tree was grown over one hundred years ago. Altogether 306,767 acres are devoted to orchards, 24,360 to small fruits and 11,136 to vineyards. The products are marketed in the provinces in the West and to some extent in the export markets of Great Britain.

country home. This movement has assumed considerable popularity in the vicinity of the larger centres and is likely to continue in the years to come.

Ontario's annual returns from her fields aggregate in a good year over two hundred million dollars. To this should be added possibly over another one hundred million from her live stock products. Thus it is seen, in spite of the very substantial contribution which the province has made towards the building up of the other provinces of Canada, a contribution which she does not begrudge and which has undoubtedly



FARM HOMES LIKE THIS ARE NOT UNCOMMON IN THE NIAGARA FRUIT BELT

Another phase of the development of Ontario agriculture which may be mentioned is the number of splendid country estates which are being built up adjacent to our large towns and cities. There has in recent years been a considerable trend, on the part of the men who have made their money in other pursuits, to purchase the old homestead, or some other good farm, and appreciating it for its agricultural value make it also a

been beneficial from a national standpoint as well as conducing to individual prosperity in many cases, she has at the same time succeeded in showing progress at home. To further emphasize this point it is of interest to quote the following figures showing the contrast in twenty-five years development in connection with the farm lands, buildings, implements, and live stock in this province:—

	Farm Land	Buildings	Implements	Live Stock	Total Farm Property
1890	622,886,000	193,438,826	50,515,583	104,086,626	970,927,035
1914	790,538,706	347,348,643	91,703,876	250,870,078	1,480,461,303

In connection with this development the work of the Ontario Department of Agriculture has undoubtedly had an important phase as a guiding factor, but that is another story, which space does not permit being told here.

AS TO THE FUTURE

As to the future there is scarcely

maintained, and in many cases it is possible to point to larger returns per acre in recent years than in years long gone by. There is a growing demand on the part of the farmers in general for knowledge of the best methods, and there is every reason to believe that the rising generation will maintain, if not surpass, the efforts of the generation now passing away. With the splendid resources which



APPLE BLOSSOM TIME IN OLD ONTARIO WHERE SEVENTY-FIVE PER CENT OF THE FRUIT OF CANADA IS GROWN

room for anything but optimism. Ontario, because of the diversity of the agriculture of the province, as above outlined, has many problems to face which are not in evidence in other provinces, but there is every reason to believe that these problems will be solved to the advantage of the people as a whole. The fertility of the soil, which is the basis of agriculture, is for the most part being well

this province, therefore, possesses, unequalled anywhere on the continent, with the advantages in the way of markets and increasing conveniences which population make possible, there is every reason for stating that the progress of the past will be fully duplicated by achievements of the future in Old Ontario, the Mother of Provinces.

MANITOBA

BY GEORGE BATHO, EDITOR OF AGRICULTURAL PUBLICATIONS, MANITOBA DEPARTMENT OF AGRICULTURE

NOT only is Manitoba in the heart of Canada geographically, but in many other respects it stands, in the conditions which it represents, about midway between the extremes. More than any other province in the Dominion, it blends the maturity and development of the East with the opportunity and freshness of the West.

AREA AND DESCRIPTION

The total area of Manitoba is 251,832 square miles, of which, roughly, about nine-tenths is land surface and one-tenth water. The extreme distance north and south is 756 miles, and the greatest width is 492 miles. For the time being, however, these figures are practically meaningless, as the great stretches of the new northern hinterland, which in 1912 were added to the almost perfect square that the province formerly presented, are not as yet occupied or exploited except by a few fur traders and prospectors. Putting our tape across the southern and older portion of Manitoba, the once dubbed "postage stamp" part of the province, we find that it extends 276 miles east and west, and measuring southward to the international boundary line from Bowsman, which is the most northern

agricultural settlement, we have a distance of 225 miles. Even these figures might suggest a very exaggerated notion as to the amount of land occupied for agricultural purposes, for, even though Manitoba is the longest-settled of the three prairie provinces, it has still big areas of arable land that are not occupied by farmers. The official returns for the current year show us that Manitoba has, in 1916, a total area under all crops of 6,583,387 acres, which, if all pushed together into a solid square block, would measure 101 miles either way. These figures, however, take no account of lands being summer fallowed, nor yet of those being used for pasture, and the latter, especially, would be hard to gauge, as with so much unfenced area, where occupancy is as yet on a free and easy basis, it is very difficult even to estimate what acreage of land is grazed.

The two principal variations from the agricultural landscape which are to be found in the southern half of Manitoba are the three big lakes (Winnipeg, Manitoba and Winnipegosis), and the hilly timbered country known as the Duck Mountains and the Riding Mountains. When it is observed that Lake Winnipeg is 250 miles in length and 65 miles wide, it will be seen that these

natural features are of considerable account, and no doubt they exercise an influence upon the climate in the way of increasing summer rainfall and comparative immunity from summer frosts.

The altitude of most of the agricultural land of Manitoba lies between 750 feet and 1,700 feet above sea level. The Red River valley lands lie lower than any other area now being farmed in the province, and the most elevated lands occupied are along the south slopes of the Riding Mountains, where some very excellent farms are well up to the maximum heights of these hills.

The subsoil almost universally is clay, with a dark mould overtop. In the Red River valley the soil is much heavier and denser than farther west, where, mainly, the top stratum has in it a generous admixture of sand. Though boulders abound in a few areas, the older portion of the province as a whole is largely devoid of loose surface stones, there being in many localities not enough for building foundations.

Perhaps three-quarters of that portion of the province so far settled was found by the farmer in a condition of open prairie, while the other one-quarter has been lightly timbered, mainly with scattered groves of aspen poplar and in some cases by willows or thinly studded scrub oaks. The open prairie being the easiest of all kinds of wild land to bring under the plough it is natural that it should have been selected for the earliest settlement. That the wooded land, when cleared, is just as productive, is the general experience of those farming in these areas.

The availability of good supplies of drinking water varies according to locality, but, generally speaking, well water is readily obtained at depths of less than fifty feet.

GENESIS OF MANITOBA AGRICULTURE

The earliest agricultural settlement to be established in Manitoba

was that made by the Red River colony, which, coming in by way of Hudson Bay, and boating southward over Lake Winnipeg, on August 30th, 1812, pushed its canoes to land on the east bank of the Red River, immediately north of the spot where the city of Winnipeg now stands. The history of this early colony is very largely a story of hardship and suffering, but the site of the earliest settlement still possesses a number of families who are the descendants of the Selkirk settlers. The relics of the agriculture of that day show how primitive the farming of that time really was.

For almost sixty years after the arrival of the Selkirk settlers Manitoba attracted scarcely any further notice as a place for agricultural settlement. In 1870 the province entered confederation, and two years later one of the largest early colonies arrived, these being the Mennonites, who came from Southern Russia and settled in the Red River valley, close to the international boundary line. The census figures of 1881 show that there were then 7,776 Mennonites in Manitoba, and these practically all came to the country in the one movement. The settlement still remains in its original location.

From quite early times a few settlements of French speaking people have been assembling themselves here and there in the province, mostly in the Red River valley, and these settlements are practically solid and undisturbed to-day.

But by all means the greatest factor in the agricultural colonization of Manitoba was the westward flow of British-bred stock from the province of Ontario, and this movement set in during the latter part of the "seventies" and early "eighties," gaining perhaps its maximum early magnitude in the "boom" year of 1882. Though varying somewhat from year to year, this movement has to some extent been going on ever since. Thus the main part

of the early stock of Manitoba is of Ontario origin; and right good stock it is.

During the past twenty or thirty years the immigration to the province has been of a decidedly mixed nature until now the people of Manitoba are of quite a cosmopolitan complexion. This remark especially applies to those in our cities, but not exclusively so. Here and there are rural areas in which are large admixtures of people from Iceland, Sweden, Norway, Austria, Hungary, Germany, Russia and Belgium, while the British Isles, the United States and all the eastern provinces of Canada have supplied their quota.

CLIMATE

I spoke at the outset of Manitoba as a province not greatly given to

extremes, but perhaps that remark is scarcely applicable to the climate. The Manitoba climate is positive. The summers are warm and the winters are cold. Rainfall between October 31st and April 15th is very rare. Our annual precipitation at Winnipeg averages 20.42 inches, of which 10.9 inches fall during the four months of summer growth, May, June, July and August. As a rule the late autumn months are dry and fine, and the snowfall of the winter is much more scant than in those places of moister atmosphere. The climate is very uniform over the entire province.

TRANSPORTATION

The settled portion of Manitoba is well supplied with railroads. The various steam railroads have within the province the following mileages:



THIS PICTURE TAKEN ON THE BRANDON EXPERIMENTAL FARM SHOWS THE VARIETY OF TREES THAT MAY BE GROWN IN MANITOBA

	Miles
Brandon, Saskatchewan & Hudson Bay Railway	69.45
Canadian Northern Railway	2,215.39
Canadian Pacific Railway	1,728.1
Grand Trunk Pacific Railway	306.5
Manitoba Great Northern Railway	91.77
Midland and Manitoba Railway	6.4
National Transcontinental Railway	94.
Greater Winnipeg Waterways Railway	91.
Total	4,602.61

When the partially built Hudson Bay railway is completed, a new route across the Atlantic will be open. The extent to which this route will serve Manitoba remains as yet to be seen.

By all means the largest class of eastward going freight is grain, and the comparative proximity to the head of the Great Lakes enjoyed by Manitoba is much in its favour. The freight rate on grain from Winnipeg to Fort William or Port Arthur is 10 cents per 100 pounds, or 6 cents per bushel for wheat. Almost all of

Practically all the commercial live stock shipped within the province passes through the Union Stock Yards at Winnipeg, the receipts from Manitoba points during the years 1914 and 1915 being as follows:

	1914	1915
Cattle.....	46,730	69,972
Sheep.....	13,290	8,169
Hogs.....	131,637	124,390
Horses.....	1,069	2,770

The following summary of maximum and minimum prices per 100 pounds paid for choice cattle and hogs at the Union Stock Yards, for



MANITOBA PRODUCED NINETY-SEVEN MILLION BUSHEL OF WHEAT IN 1915
There are still Thousands of Acres like this in Manitoba available for Settlement.

the grain grown in Manitoba enjoys a rate of not more than 13 or 14 cents per 100 pounds.

MARKETS

Manitoba's markets lie to the east and south. Her cereal shipments are almost entirely sent to Europe and the provinces farther east. Her cattle are well divided between the markets of the east and those of the United States, while her hogs and bacon are mostly sent eastward.

each month of the year 1915 furnishes a basis for comparison with the markets for live stock elsewhere:

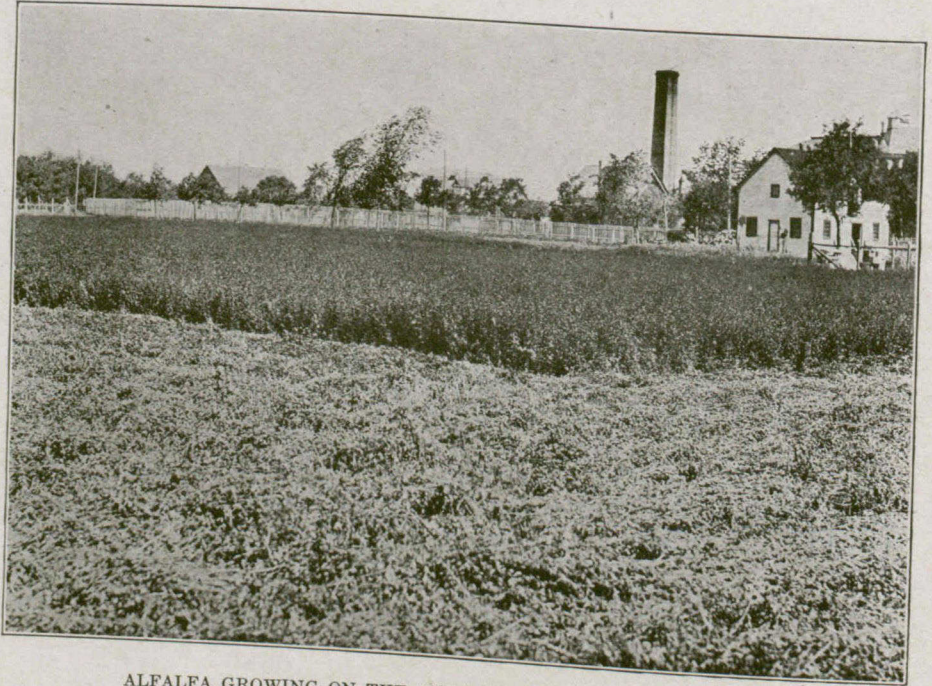
	Cattle		Hogs	
January...	\$6.50 to	\$7.25	\$6.75 to	\$7.25
February..	7.00 "	7.50	6.90 "	7.35
March....	7.15 "	7.60	7.15 "	7.80
April.....	7.25 "	8.50	7.90 "	8.35
May.....	8.50 "	9.15	7.90 "	8.85
June.....	8.25 "	8.85	8.00 "	8.75
July.....	7.25 "	8.85	8.00 "	8.75
August....	7.25 "	8.00	8.00 "	8.75
September	6.65 "	7.50	9.00 "	9.50
October...	6.50 "	7.15	8.40 "	9.50
November	6.50 "	7.05	8.50 "	9.25
December.	6.50 "	7.10	8.40 "	9.10

AGRICULTURAL PRODUCTION

The phrase "Manitoba Hard" wheat, together with the world-wide reputation for excellent milling quality that that product has gained, has caused many folk to think of this province as though wheat growing were our only agricultural ambition. This is not the case. There are several areas, especially in the

parts with the higher altitudes, where oats are grown more extensively than wheat, and live stock, especially cattle and swine, are receiving more and more attention from year to year.

Cereals.—Taking the figures for each fifth year from 1885 to 1915, we have this record in cereal production:



ALFALFA GROWING ON THE ASYLUM FARM, SELKIRK, MANITOBA
This shows the First Cut, taken June 15th, 1915.

YEAR	Wheat, Acres	Oats, Acres	Barley, Acres	Flax, Acres
1885.....	357,013	157,026	51,189	
1890.....	746,058	235,534	66,035	
1895.....	1,140,276	482,658	153,839	82,668
1900.....	1,457,396	429,108	155,111	20,437
1905.....	2,643,588	1,031,239	432,298	24,707
1910.....	2,962,187	1,486,436	624,644	41,002
1915.....	3,664,281	2,121,845	1,039,849	64,863

Ten-year averages as to yield are very satisfactory and informing figures, and the following are the

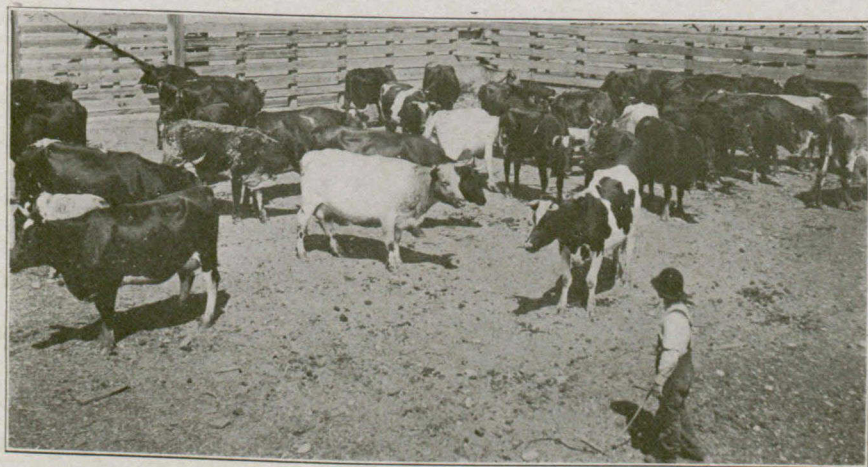
official averages of yields per acre for the years 1906 to 1915 (inclusive):—

	Ten-Year Average per Acre
Wheat.....	18.4 bushels
Oats.....	39.4 "
Barley.....	28.5 "
Flax.....	12.1 "

Potatoes and Roots.—Though potatoes and all root crops grow luxuriantly in Manitoba, the acreage devoted to them is comparatively small. Potatoes are grown only for local consumption, and although farmers could use very many more roots for live stock feeding, the general shortage of farm help, together with the keen freezing nature of our winter, has restrained them from doing so. The figures for 1915 were as follows:

boundary of the province. Fodder corn has commanded an increasing measure of attention during the past few years, and there were grown last year 52,713 acres.

Cattle.—Manitoba was never, even in the "early days", devoted to that romantic type of open grazing on the public domain that flourished farther west. There were two reasons for this. One was that once the flow of settlers began to move westward the wheat growing possibilities of Manitoba lands were at once patent, and the settlement became too dense for large ranch companies to exist. The second reason was that our



COWS SECURED FOR DISTRIBUTION TO MANITOBA SETTLERS UNDER THE SETTLERS' ANIMAL PURCHASE ACT, 1916

	Area, Acres	Average Yield, Bushels
Potatoes.....	67,343	114.8
Roots.....	17,352	179.5

Fodder Crops.—As yet the greatest source of hay supply in Manitoba is the native grasses of the prairie, and many of these produce hay very rich in nitrogen. Still these are not the only grasses grown. Western rye grass, awnless brome, and timothy are all sown somewhat, while alfalfa and red clover are also used to a lesser extent, the latter being most successful in the Red River valley and from there to the eastern

grasses, having a generous supply of summer rainfall, remained unripe until too late in the season, and this, together with our usually constant carpet of snow, made it difficult for cattle to "rustle" a living during the winter without hand feeding. But we have a good climate for all classes of live stock, and, although our winter temperatures are low, it is remarkably easy to provide sufficient shelter for animals. As indicating this fact, it is noteworthy that experiments in steer feeding at the Brandon Experimental Farm, con-

ducted now for several years, go to show that where tree shelter is available for fattening animals, they will make almost as good gains as those in barns, or at least so close that the advantage of the barns would scarcely pay for their building. This refers to fattening steers; with milch cows and young stock it is quite different.

The beef breeds predominate, the Shorthorn being the favourite, with the Hereford and Aberdeen-Angus less freely represented. The Holstein, Ayrshire and Jersey are the most popular dairy breeds.

The present year has seen the inauguration of a new policy on the part of the Provincial Government in the way of aiding settlers who are financially unable to stock their land with cattle. Into some of the newer districts, where there is abundance of pasturage, but where the lands are not first-class cereal areas, colonists have gone without sufficient capital to stock their lands with animals. Under the new Settlers' Animal Purchase Act, cows are supplied under lien to these settlers. It is as yet too early to record the outcome of this scheme.

Horses.—Manitoba has not produced horses to export to any extent; indeed, during the past 20 years the province has imported more horses than it has shipped out. This has largely been because of the expansion of acreage being cultivated, rather than because of any natural difficulty in the way of horse raising. The class of horse being reared is generally of a superior type, the heavy breeds having a decided preference.

Commencing with this season a new Stallion Enrolment Act is operative, which provides that all stallions stood for public service at a fee shall be pure-bred and enrolled with the provincial Department of Agriculture, acting in concert with the Stallion Enrolment Board. A less advanced system of stallion enrol-

ment (which permitted grade stallions also to stand for service) has been in vogue for a few years past. The figures of 1915, the latest available, show that stallions enrolled were divided among the breeds thus:

Clydesdales.....	505
Percherons.....	157
Shire.....	19
Suffolk.....	5
Draught.....	26
Hackney.....	21
Coach.....	5
Thoroughbred.....	15
Standard-bred.....	44
Grades.....	175
Total.....	972

Sheep.—Sheep keeping has never been a very important branch of Manitoba farming. This is not because our lands, our climate or our feeds are unsuitable. Indeed, sheep thrive remarkably well in Manitoba; but the occasional annoyance by coyotes, together with the fencing problem, have been the chief deterrents in sheep expansion. During the past five years, however, there has been an ever-growing increase in the number of farm flocks established. During the years 1915 and 1916 the Manitoba Department of Agriculture, acting as agent for the farmers has sold on a co-operative basis all wool consigned to it for sale. Through the kindness of the Dominion Department of Agriculture, this wool has all been graded by a Dominion Government wool grader; and it is significant that whereas last year about 70,000 pounds were sold, this year the amount consigned amounted to approximately 160,000 pounds. The price realized last year was 26.8 cents; this year it has been 31.9 cents.

Several breeds of sheep are kept in Manitoba, but the Down breeds really predominate, with a considerable sprinkling of Leicester blood.

Swine.—Pig raising has always occupied an important place in Manitoba agriculture, and it is safe

to say that the popularity of the hog will continue. The bacon type finds almost exclusive favour, although of late years the Poland China breed has attracted more attention to the lard type of hog. In the city of Winnipeg are several large packing houses, and a considerable proportion of the hogs reaching Winnipeg are made into bacon and hams within the province.

Dairy Products.—The strongest feature of Manitoba's dairy enterprise is factory butter-making. Within the province are 36 cream-

Within the past decade one very important development has occurred in connection with Manitoba dairying. This is the centralized creamery movement. Today the patrons of creameries are not confined to the wagon range of a local butter factory. The large city creameries, doing an ever-increasing business, receive no cream except that coming by rail, and almost every railway train carries its load of cream and milk cans. Whatever else may be said in regard to this development, it can at least be claimed that it



FIELD OF CABBAGES ON THE BRANDON EXPERIMENTAL FARM
Vegetables of Almost Every Sort Produce Abundantly in Manitoba.

eries and 22 cheese factories. It is rather remarkable that practically all of the latter are in the French and Mennonite settlements, while the former are well scattered over the province. In 1915, a total of 53 carloads of creamery butter was exported by Manitoba, and the production and prices were:

Product	Pounds	Price, Cents
Dairy butter.....	4,150,444	23.0
Creamery butter.....	5,839,667	29.0
Cheese.....	726,725	15.0
Milk.....	44,079,000	2.1
Sweet cream in pounds butter fat.....	496,334	32.0

makes for the development of the dairy industry in districts where there is not as yet a sufficiently solid block of dairy farmers to support a local creamery. In this way the enterprise is decidedly beneficial to the province.

Poultry.—So far poultry keeping in this province is pretty much a domestic industry. We have got pretty well past the day of conspicuous importation, and we cannot yet claim to export either eggs or poultry to any great extent. All kinds of poultry thrive in our

climate, and, with the manifest economy of poultry keeping where grain is produced so cheaply, it is safe to predict a steady growth in the industry.

Fruits and Vegetables.—Up to the present tree fruit growing is in the pioneer stage. In no other sphere of plant production did old Dame Nature so positively assert to the early settlers that the Manitoba climate was unlike the climate "down east". Thousands of trees from eastern nurseries, of varieties quite hardy in Ontario, have gone to

experimentation; and every farmer, by planting suitable varieties, can easily raise all of these fruits needed for his home use. The most trying factor, perhaps, is a shortage of summer rainfall.

Vegetables of almost all sorts thrive wonderfully and yield abundantly.

THE AGRICULTURE OF THE FUTURE

There is always danger in prophecies; yet there seem to be a few forecasts that may be made with com-



SUCCESSFUL PRODUCTION OF APPLES BY A. P. STEVENSON, MORDEN, MANITOBA

the brush pile. Forty below zero demands varieties with a new kind of iron in their blood. But those kinds are coming, and already small apple and plum orchards here and there are coming into bearing, the most conspicuous success, of course, being that attained by Mr. A. P. Stevenson, of Morden, who annually gathers apples, plums and cherries of scores of varieties.

Success with small fruits is quite a different matter. Currants, raspberries, strawberries and gooseberries are all beyond the stage of

parative safety. I think the safest of all these is that as the years go by mixed farming will come into more general practice. This movement is not waiting for converts, because practically everyone is converted to the greater economy and efficiency of this method of farming. It is mainly waiting for the day when the man on the land will be able to shrink the percentage of his capital to be locked up in land, and increase the percentage that he can invest in live stock and equipment needed in connection with the keeping of

animals. The spread of weeds and the waste of humus, which inevitably accompany continuous cropping, are making converts to a change of methods quicker and more surely than any other process could possibly accomplish it. Silos, dairy herds, sheep, hogs, and chickens will save the situation and enable the boys and girls to attend the agricultural college even after the mortgage company has foreclosed and ended the chapter of continuous wheat cropping and straw burning.

Only in a few cases will the mortgage company ever have a chance to foreclose. In most cases the change to a better balanced kind of farming is proceeding as an evolution, and will need no revolution. Better homes, better fences, better shelter for live stock and a better class of live stock kept, better treatment of the land in the way of return of manure and crop rotation,—these are some of the things now on the agricultural landscape.

AGRICULTURAL ORGANIZATIONS

An account of Manitoba agriculture would scarcely be complete without some reference to those organized agencies that have to do with its promotion.

The Manitoba Agricultural College, equipped at a cost of four million dollars, is located about three or four miles south of Winnipeg, on the banks of the historic Red River. The governing body is a board of ten directors, four elected by the directors of the Live Stock and Grain Growers' Associations and five by Order-in-Council. The Minister of Agriculture is *ex-officio* a member of the board. The enrolment has grown since the opening in 1906 (at a site previously

occupied) from 83 students to 350 students in the regular winter courses in agriculture and home economics.

Manitoba has its full quota of agricultural associations, most of them incorporated by special act of the Legislature and financially aided through the Department of Agriculture. Among these may be named the four live stock associations—Horse Breeders, Cattle Breeders, Sheep Breeders, and Swine Breeders. Also there are poultry and horticultural associations at different points, and a provincial dairy association.

Among the agricultural exhibitions of Manitoba, the summer show at Brandon is practically, and the winter show there is actually, provincial in character. Most of the exhibitions in the province, however, are held under the auspices of agricultural societies, of which, according to the figures for 1915, sixty-eight are in operation.

Then there are 102 Home Economics societies organized, mainly among the farm women, with a total membership of 3,730; and there are Boys' and Girls' clubs with about 12,000 members.

Very important and very influential, though not drawing any Government aid, is the Manitoba Grain Growers' Association, which convenes annually the largest single agricultural gathering that is held within the province. The membership of this association numbers 9,000.

These are among the agencies that are seeking to give direction and impetus to our agricultural efforts and enable the farmers of Manitoba to avail themselves of our undoubtedly vast agricultural resources.

SASKATCHEWAN

BY F. H. AULD, DEPUTY MINISTER OF AGRICULTURE

"SASKATCHEWAN" and "Wheat Growing" are almost synonymous. Half a life time ago Saskatchewan was the centre of the great lone land, now it is the centre of the grain production of Canada and was the producer of half of Canada's wheat in 1915.

AREA AND DESCRIPTION

Saskatchewan has a land area of 155,764,480 acres and a water surface of 5,323,520 acres. A line drawn from east to west, a little north of Prince Albert, marks the division between the agricultural south and the practically unexplored north. Northern Saskatchewan is known to possess valuable resources in timber, minerals, fish, fur and game, although on account of their limited development their annual production ranks in importance far below agriculture. South of township 64 lie the great prairie lands which have made Saskatchewan so well known. This area contains 86,826,240 acres, of which possibly 50,000,000 acres rank as arable land of the first or second class. About half of this southern portion is level or undulating prairie, while the remainder varies from open park country diversified with light poplar bluffs to rougher land in the districts east and north of Prince Albert heavily timbered with spruce.

WHEAT-GROWING DISTRICTS

The districts where soil and climatic conditions favour wheat growing are, to use a general classification, those south of the Qu'Appelle river, west of the Last Mountain and the Quill Lakes and south of the main line of the Canadian Northern Railway west of Humboldt. This is an arbitrary and very general division and the area therein dedicated to wheat growing contains some splendid mixed farming country just as the area outside these boundaries contains a few splendid wheat-growing districts. Flax may be grown in any part of this area as well as oats, barley and winter rye. But the area north and east of the boundary I have outlined is better adapted for the growing of oats than of wheat. It also produces abundantly both rye and barley and a luxurious growth of both native and tame grasses, which, with an abundance of natural shelter, render it especially suitable for live stock production and for dairying.

THE RANCHING STAGE

The earliest settlers in Saskatchewan followed pastoral rather than agricultural pursuits. Horses and cattle were grown extensively, while in a limited and restricted area sheep ranching was practised. The short,

thick natural grasses of the range, cured where they grew, afforded pasturage in winter as well as in summer, and the chinook wind was relied upon in the south-west to clear away the snowfall and render the grasses available for stock. If it failed to do so heavy losses were only averted when hay was available in sufficient quantities. But this was the exception rather than the rule, and the occurrence of severe weather with a heavy snowfall was the main menace of the cattle or sheep rancher. Horses are better rustlers and were more independent of the chinooks.

for the production of all kinds of live stock.

The historic range has now been parcelled out to homesteaders, but the live stock industry instead of suffering will be carried on along different lines and greatly extended. Ten or more acres to support a steer was the basis for stocking the range. We shall leave it to the farmers of Saskatchewan to see how many cattle can be profitably raised on ten acres without reducing our export of wheat.

THE ERA OF WHEAT GROWING

While the ranching stage marks



HERDING CATTLE IN NORTHERN SASKATCHEWAN

The passing of the range is now, however, almost a matter of history except in so far as the rougher lands are concerned and save for those areas preserved from settlement through being leased for grazing purposes. But in such districts as the Moose Mountain, Wood Mountain, Cypress Hills, Beaver Hills, Touchwood Hills, Last Mountain, and generally through all the country tributary to the main line of the Canadian Northern Railway, thousands of splendid specimens of grass-fed beeves are marketed annually, and these localities will some day rank with the best on the continent

the first period in the development of agriculture in Saskatchewan, the second may be described as the era of wheat growing. The wheat-growing period is again divided by the discovery by Angus McKay of the system of summer fallowing, which was almost epochal. By this discovery crop uncertainty was very largely removed and owing to the success which attended the efforts of the pioneer grain growers, Saskatchewan soon became the third province of Canada in point of population and the first in grain production.

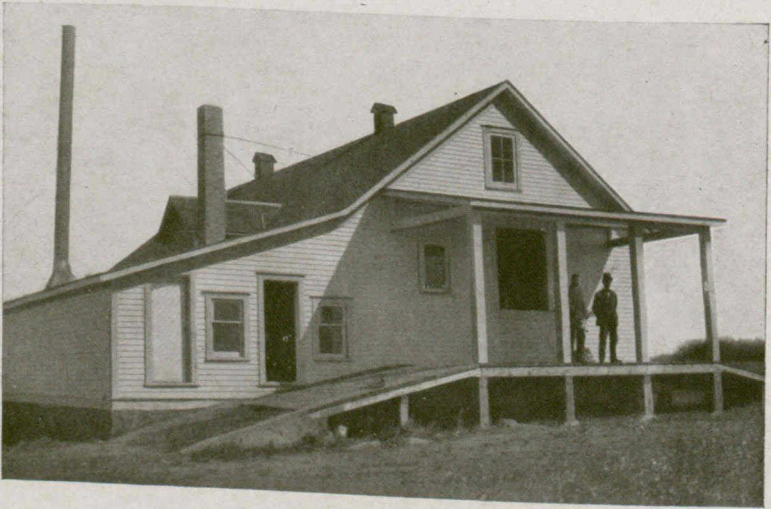
Before the completion of the railway in 1885 homesteaders were

attracted to the valley of the Qu'Appelle and to districts north and south of it west of the Manitoba boundary. It is also interesting to note that even in the early days of wheat growing in Saskatchewan bonanza farms were not unknown. The Bell farm at Indian Head and the Tanner farm at Qu'Appelle are notable examples, and at about the same time Sir John Lister Kay's farming experience was being obtained. Settlements of English, Scotch and Canadian farmers came early, and even by 1886, colonies from Germany, Finland, Sweden, Iceland, Roumania and Hungary

thousands of farmers from Eastern Canada, Great Britain and continental Europe, while the more recent American "invasion" from the Western States is so well known as to require no comment.

ACTUAL AND POTENTIAL GRAIN PRODUCTION

According to the Dominion Census of 1911 the land occupied at that time in Saskatchewan was 28,642,973 acres, of which possibly one-third is not yet under cultivation. The same authority estimates the area of possible farm land in



CREAMERY AT WADENA, SASK.

were being planted at various places in the eastern part of the province, which have done their share in developing the country. But previous even to this there were settlements of whites at Fort Ellice, Touchwood Hills, Carlton, Prince Albert and Battleford, and it is related that it required the use of four threshing machines for six months to thresh the Prince Albert wheat crop of 1879. These were the pioneers, "the first low wash of waves where yet shall roll a human sea," who were followed, not immediately but within a few years, by

Saskatchewan at 93,459,000 acres. Since the bumper crop of 1915 was grown on 10,967,160 acres it is a safe guess that the area of occupied farms in 1916 is not more than a third of the foregoing estimate of possible farm land.

These figures of area and occupancy are interesting from the standpoint of production, as they indicate a potential development of grain growing to a billion bushels in a single season. A crop in excess of 319,000,000 bushels was grown in 1915 from less than 11,000,000 acres, half of the crop being wheat, while

sixteen years ago six and three-quarter million bushels of grain from 642,000 acres was considered a great accomplishment. Wheat is, of course, the principal export crop of Saskatchewan and all of the surplus of suitable quality after providing for local flour mills and seed requirements is exported. Oats are becoming more of an export crop, although the greater part of this crop continues to be used locally for feeding. Barley is not largely grown. Flax was in great favour a few years ago because of the high price, because of the acre yield re-

choicest quality of grain. Seager Wheeler has become almost a national celebrity through his painstaking care in growing and preparing exhibition grain. In 1911, he won the championship of America at the New York Land Show. In 1913, Paul Gerlach of Saskatchewan won the championship for wheat at the Dry Farming Congress. At the national exhibition, Dallas, Texas, Hill & Sons won for the third time the world's prize for the best peck of oats. At the Dry Farming Congress in 1915, Saskatchewan won first and second for hard spring wheat and



CUTTING WHEAT NEAR MOOSEJAW, SASK.

quiring less storage space relatively than other crops, and because it could be grown on newly ploughed prairie the same season. It has since fallen somewhat into disfavour, partly because of the facility with which it spreads weeds, but mainly because of the decline in values.

SOME PRIZE WINNERS

The success of Saskatchewan exhibitors of grain at national and international exhibitions of soil products proves the suitability of the province for the production of the

first for hard winter wheat and white oats, with firsts also for alfalfa, brome and rye grass, and several other premiums in addition to firsts and championships. Seager Wheeler again drew first and championship at this exposition.

MIXED FARMING COMING

It is neither desirable that the present methods and practices in agricultural production should be followed indefinitely nor probable that they will not soon change. As surely as the period of ranching was

succeeded by the era of wheat growing will the development of mixed farming supersede exclusive grain growing. The "summer-fallow", a necessary part of grain growing under the present system, while immediately profitable is immensely wasteful of nitrogen and humus and has already developed a serious condition known locally as "drifting", which means that the finely pulverized top soil is readily transported by strong winds, to the loss of the owner, and his neighbour as well, if it contain seeds of noxious weeds. Exclusive grain growing favours the spread of noxious weeds and interferes with their control.

a very limited market value as forage. But if sufficient stock were kept to convert the crop into milk and beef, and wool and mutton, greatly different results would be obtained.

Live stock farming as compared with grain growing is more dependent for its success upon an adequate supply of water, and this more than anything else is the determining factor with regard to the number of stock which may be maintained on any farm, or in any district in Saskatchewan. Important sections of the area which I have described as being adapted to wheat growing are still inadequately supplied with water



THRESHING SCENE ON THE 1500 ACRE FARM OF JOHN GILROY, GOVAN, SASK.

Live stock farming is the only permanently successful and economically profitable way of dealing with the problem of noxious weeds and "drifting" soils, and while the public generally may not be prepared to admit the fact it is becoming more and more apparent. I may illustrate my point by referring to wild oats, under our conditions one of our most serious noxious weeds, which soon ceases to be a problem when crops of oats or fall rye are grown and used as hay. The "hay" would be too abundant on many farms to be consumed by the present supply of live stock and would be expensive to market, besides having

for stock, and until this problem is solved the farmer cannot be expected to progress in stock raising. Conditions differ from the balmy days of the ranching industry when the rancher's corrals were near some water course and his stock ranged the plains. Unless a local supply of water is available it is not now expedient under farming conditions to drive the stock even a few miles to water, nor to draw water to the stock. It is right, however, to say that in many districts where water is lacking the attempts to obtain it have been insufficient to prove the non-existence of a suitable water supply, and it is not unlikely that

more persistent efforts will bring success. Much is possible in providing a water supply by collecting the run off from the fields and slopes into natural basins, and there retaining it for future use. The heavy impervious clay prevents much wastage by percolation and this condition almost invariably obtains where subterranean water is difficult to find.

HORSES

At an early date some of the horse ranchers began the use of draft stallions for breeding purposes, although most of them used thoroughbred sires and raised a lighter type of animal. At present the use of sires of the draft breeds is the rule rather than the exception, as the accompanying enrolment figures for 1916 indicate:—

Clydesdale.....	1,868
Percheron.....	670
Shire.....	68
Standard Bred.....	189
Hackney.....	52
Thoroughbred.....	27
French Canadian.....	1
French Coach.....	3
German Coach.....	7
Suffolk.....	36
Belgian Draft.....	126
Saddle Horse.....	6
Shetland Pony.....	1
Morgan.....	1
Jack.....	1
Total pure breds.....	3,056
Grades.....	606
Crossbreds.....	2
Scrubs.....	584
Total.....	4,248

Advanced legislation with respect to horse breeding provides for the annual enrolment of all stallions used for breeding purposes and the examination and licensing of all stallions used for service in municipalities included in the Licensed Stallion District. This measure has been found effective in driving out unsound and inferior animals and in encouraging the introduction and use of a better class of stallions. Saskatchewan Clydesdales are famous throughout

Canada as representative of the best development of this famous breed, and show ring champions both male and female are owned by Saskatchewan breeders. The following figures indicate the development of the horse-breeding industry in Saskatchewan. Figures for 1881 and 1891 are for Alberta and Saskatchewan combined: In 1881, 10,870; in 1891, 60,976; in 1901, 83,801; in 1911, 507,468, and in 1915, 667,443.

CATTLE

The dual-purpose cow is the popular type of bovine in Saskatchewan. Shorthorns and Shorthorn grades predominate. Hereford and Aberdeen Angus, while popular in some districts, are less numerous in the province. Grade cows of Holstein and Ayrshire breeding have been introduced to a limited extent by the Saskatchewan Government, and sold on credit terms under its live stock distribution policy, but the use of bulls of the dairy breeds is not general and there is little if any indications of a tendency in this direction, although dairying is increasing rapidly in popularity and importance. Jerseys are regarded as unsuitable for Saskatchewan.

Statistics show an imposing development of the cattle industry in Saskatchewan. Although a division has not been made between ranch and farm stock, the balance except in the earlier years is largely in favor of the latter. The figures for 1881 and 1891 include Alberta cattle:

In 1881, 12,872; in 1891, 231,827; in 1901, 268,779; in 1911, 633,638, and in 1915, 931,561.

There is only one large abbatoir in Saskatchewan, located at Moose Jaw, but a large number of cattle are slaughtered locally for home consumption. Saskatchewan, however, supplies only slightly less than half of the cattle marketed at Winnipeg. If these animals were consigned to Saskatchewan markets it would doubtless result in a large proportion

of the unfinished animals, which are numerous, being returned to the farms for winter feeding. At present a Royal Commission is investigating the question of the marketing of Saskatchewan live stock and live stock products and, if as a result of their investigations and recommendations, there should develop local markets which would absorb the bulk of the stock marketed from this province, the feeding on our farms of the unfinished portion of the receipts would probably be a direct result. Few if any of these animals are returned under present conditions from Winnipeg, and persons desirous of feeding have restricted opportunities of buying animals which leave the province.

able originally to the Merino and Rambouillet breeds, but also possess blood of the medium wool breeds.

Sheep ranching was followed mainly in the south-west, and only in a restricted area therein could lands be leased from the Dominion Government for sheep ranching. The range ewes have proven a profitable farm investment, and mated with rams of the popular mutton breeds produce in a couple of generations a very suitable type of sheep for our western farms. A few pure-bred flocks are kept in Saskatchewan consisting of Shropshires, Oxford Downs, Leicesters, and representatives of a few other breeds. Statistics show that there were 144,370 sheep in Saskat-



FARM HOME AND BUILDINGS OF R. D. FAIRBAIRN, CARNDUFF, SASK.

It has been proven by test in the districts where natural shelter is plentiful and water available that cattle will winter outside and make substantial and profitable gains if fed sheaf oats or other suitable rations. Freedom from tuberculosis is claimed for cattle raised and fed under these conditions.

SHEEP

The noxious weeds problem is responsible for the recent introduction of many flocks of sheep on prairie farms where, owing to the lack of suitable fences, they were formerly strangers. Many of these new flocks consist of range ewes which are trace-

chewan in 1915 as compared with 114,216 in 1911 and 66,048 in 1901. There were 64,920 in Alberta and Saskatchewan in 1891 and only 346 in 1881. The live stock distribution policy of the Saskatchewan Government and the annual sales held by the Saskatchewan Sheep Breeders' Association have materially assisted in the establishment of promising farm flocks in Saskatchewan during the past five years. Coyotes and dogs are a constant source of danger, but the greatest obstacle is the comparative lack of fenced farms.

SWINE

The barometer of prices for hogs

rather than for *pork products* is a fair index of the fate of the hog. On a rising market, money is invested in brood sows, and when prices fall sales are heavy. But the man who stays with the game gets what there is in it and with recent prices there should be considerable. The bacon hog is the kind generally raised in Saskatchewan, and the Yorkshire is the favourite, with the Tamworth a runner-up for first place, but not very close. The fat, quick-maturing Berkshire, however,

in Alberta and Saskatchewan in 1891, 16,283, and in 1881, 2,775. There is practically no limit to the possibilities of hog-raising in Saskatchewan when provision is made for a supply of suitable forage.

DAIRYING

No description of Saskatchewan agriculture would be complete without a special reference to the dairying industry. The development of co-operative dairying in



ONIONS—A SPLENDID MONEY-MAKER AND POPULAR CROP AROUND SASKATOON

has his backers as well. The bulk of the hogs exported from Saskatchewan go to Winnipeg; Saskatchewan supplying 237,403 head for that market in 1915, in addition to several thousand head slaughtered at Moose Jaw and at local points throughout the province. During 1914 and 1915, Saskatchewan supplied more than half the hogs marketed in Winnipeg.

There were said to be 329,246 hogs in Saskatchewan in 1915; 286,295 in 1911; 27,847 in 1901, and

Saskatchewan really dates from 1907, although several creameries were started about 1895, when, owing to uncertain returns from grain growing due to an imperfect knowledge of right tillage operations, it was deemed that the establishment of creameries would impart agricultural stability to the country. However, when success began to attend wheat growing, the support of many of the creameries languished and of the original creameries only two are still in operation, although large

privately owned plants have replaced four of the original co-operative enterprises. More success, however, was attained by the co-operative creameries which survived this period and those subsequently organized, although in 1907 there were altogether only six creameries operated in Saskatchewan. Four of these were operated under the direction of the Dairy Commissioner and one of them was privately owned and operated. The four operated by the Dairy Branch had 213 patrons and manufactured 66,246 pounds of butter. Fifteen co-operative creameries were operated under the direction of the Dairy Commissioner in 1915 with an output of 2,012,401 pounds. Eight independent creameries in 1915 manufactured only a little less than the co-operative creameries and have increased their annual output very largely each year.

Much of the present success of creamery industry in Saskatchewan is due to the thorough and progressive policy introduced by the Dairy Commissioner about 1907, which provided, among other things, for the uniform management under Government supervision of the co-operative creameries which desire it, the centralization of creameries to be erected and a measure of assistance from provincial funds for the payment of express charges on cream shipments, the payment for cream on a quality basis, the marketing through one office of the products of all creameries operated by the Dairy Branch, and the grading of all export butter.

More than half of the creameries in Saskatchewan are in the mixed farming districts, or in cities, but a few are located in what are essentially wheat-growing districts. That the latter are doing a successful business is another indication that Saskatchewan agriculture is proceeding along sane and progressive lines.

There are no cheese factories operated in Saskatchewan, as the

comparatively sparse settlement favours the manufacture of butter in centralized cream-gathering creameries.

FRUITS AND VEGETABLES

The space at my disposal does not permit of further reference to the agricultural development of Saskatchewan, but while grain and live stock are at present the staple products of this big province, nowhere can a finer quality of small fruits and vegetables be grown than in Saskatchewan. True, there is not the variety which obtains in more southern climes, but the quality and quantity which can be produced of those kinds for which the climate is well adapted, leaves nothing to be desired.

ORGANIZATION OF EXTENSION WORK

Organizations through which the best information available with respect to agricultural production is extended are the agricultural societies and homemakers' clubs, under the direction of the College of Agriculture, and the Grain Growers' associations. There are 126 agricultural societies, with a total membership of about 20,000, which are paid legislative grants of \$50,000 per annum in proportion to work actually performed. The homemakers have 160 clubs with a large membership. The Grain Growers' locals in Saskatchewan number about 1,400 and the membership is approximately 35,000.

The College of Agriculture has supervision and direction of extension work, although in the performance of its executive duties the Department of Agriculture exercises an influence. Agricultural secretaries and district representatives also take an active part in the work of agricultural betterment, and while the various agencies have not achieved their ideals they each have much useful work to their credit.

ALBERTA

BY J. MCCAIG, EDITOR OF PUBLICATIONS, DEPARTMENT OF AGRICULTURE

THE total area of Alberta is 255,285 square miles.

The land surface is estimated at 252,925 square miles and the water surface at 2,360 square miles. While it is not possible to give close figures on the acreage of good land in Alberta, it is estimated that of the 161,872,000 acres, 100,000,000 acres are suitable for cultivation. Of this area less than 4,000,000 acres, or 4 per cent, have been brought under cultivation. The crop area for 1915 is given as 3,834,738 acres.

PHYSICAL PROPERTIES

The province of Alberta displays a large diversity in its agriculture. This is due, primarily, to variations in climate of both a general and special sort and, secondarily, to soil and surface character, though the two factors of climate and surface conditions are rather closely connected. Generally speaking, the area known as the Prairie Provinces consists of two more or less distinct kinds of country. The southern part is open prairie over the whole of the interior great plain district. The northern part is practically open and is principally covered with light timber or scrub in bluffs, with heavier patches of timber along the river valleys. In the extreme upper section, the vegetation declines in height, luxuriance and variety. In

Alberta the same conditions do not prevail. There is a greater diversity in surface features, a much greater variety in climate, and also a difference in the adaptations of different parts of the province to productive use. While the greater part of Alberta is open prairie and constitutes what is commonly called the third prairie steppe, the elevation varying from 2,000 to 4,000 feet, and on the west side of the province as far north as the Rocky Mountains touch it, which is about half way up the west side, there is a strip about sixty miles wide consisting of what is called the foothills country. There is no second range of mountains within the main range of the Rockies, but the foothills are so numerous as to give a consistently broken and varied character to the surface. It is cut by deep canyons and there is considerable timber, particularly along the rivers. On the open prairie itself, the bench land is cut by numerous coulees running back for a considerable distance at right angles to the rivers. This description of surface applies chiefly to the southern part of the province, approximately 200 miles in width from north to south.

The central part of the province is a good deal like the corresponding area in Saskatchewan and Manitoba.

There is considerable scrub on the land, in some places light and in others rather heavy, and there are also numerous bluffs or taller growth made up principally of poplar, which is commonly described as pole timber. The rivers likewise cut deep channels, sometimes 200 or 300 feet, just as they do in the southern part of the province. Along the rivers there is considerable timber: spruce, fir, birch and poplar. The northern part of the province, on the other hand, is somewhat different from the northern part of the other provinces. Towards the eastern boundary of the province, there is

development towards the northern parts of the province.

CLIMATE

While the climate of all three prairie provinces is generally characterized as extreme, there are influences operating directly in the case of Alberta that mitigate its extreme character. The same conditions are responsible for differences in effective precipitation between the southern and central parts of the province, and also for the matter of the settlement of the northern part of the province, as has been already mentioned.



PURE-BRED SHORTHORNS IN CENTRAL ALBERTA

some rough and broken country, but in the western part, that is, the upper Peace River valley, there is excellent agricultural land, a great deal of it being open and such as the ranchman would call short grass country. It has already undergone considerable settlement, and, with the further extension of transportation will become well populated. With respect to this feature of a possibility of northern development Alberta stands to some extent by itself. The difference in surface appearance and vegetation of these different areas is largely a matter of climate, as is also the matter of

THE CHINOOK INFLUENCE

The outstanding feature of climate is the chinook wind. The chinook may be described as a warm, dry wind descending from the southwest on the interior slope of the Rocky Mountains. Its warmth was supposed to be actually due to the Japan current. This belief is still common, but by the best authorities it is now explained as a dissipation of air from a high pressure area in the Rocky Mountain plateau itself. Condensation of moisture on the western side of the mountains releases the heat which is communi-

cated to the air itself and the compression of the air by the upper layers as it travels down the descent of the eastern slopes makes it to a still greater extent a warm, dry air. The chinook influence is quite strong and characteristic in the southern part of the province, and the same general influence operates throughout the whole of the inner slope of the Rockies, but to a much lesser degree in the central and northern parts of the province. It is this influence that gave Southern Alberta its reputation as a ranch country. The chinook is not a persistent wind, but occurs from time to time during both winter and summer. In winter it breaks up the severity of the season probably four or five times between November and April, and uncovers the native grasses, so that it has been possible to graze stock outside during the whole year. It was due to the chinook winds that the first cattle enterprises were established in Alberta. As far back as the early 70's, cattle were brought in from Montana to the Macleod district, the first being the property of Mr. Joseph McFarlane. This grazing enterprise was the beginning of Alberta agriculture. Since that time, the development has been extremely rapid and we have had in quick succession, or side by side, the rancher, the grain-grower, the dairyman, the stock-raiser and the irrigator.

THE UPPER SASKATCHEWAN

It might have been expected that the settlement of the province would proceed from the nucleus of western development in the Selkirk Colony on the Red River, but population and transportation were covering the West much more rapidly in the United States than in Canada, and the beginnings in activity in the use of land in Alberta appeared first as side springs from the United States pioneering movement. So far as the Selkirk Colony had shown any

expansion, growth promised chiefly along the north Saskatchewan valley by way of the Touchwood hills to North Battleford and Edmonton. This was but the spur of fever in the blood of the pioneer and had practically no commercial aspect. Such settlement as did take place was that of isolated cabin buildings on garden spots backed by the woods and warmed by the sun, and beside the flowing springs. A garden was as good as all outside, for there was no fat traffic in the things the earth provided anyway. There is a certain type of real pioneer who is not of the neighbour hunting sort. There are a few of these left in all the western provinces, men of great individuality with a simple code of honour and a simple standard of living.

THE STEEL LINK

The integration of Alberta with the rest of Canada for modern business occurred in 1885, with the completion of the Canadian Pacific railway. Whether the blacklands of the Upper Saskatchewan were intrinsically more desirable than the chocolate soil of the open prairie was not the question. There is no doubt but that wood is a desirable accessory to land, and in some cases the lack of water is a drawback, but the railway determined the movement of settlement from 1885 on. Calgary became an important town by reason of its connection with the commercial world. It still remained, however, a cow town until about 1900, and the country tributary to Calgary, to the boundary on the south, and the Red Deer on the north, was cow country. The other important centres about which the cow business was active were MacLeod, Lethbridge and Medicine Hat. To say that the country was a cow country is not to say that there were no settlers who contemplated farming, but that ranging was the dominant interest. The fundamental reasons for this type of development in

Southern Alberta were the chinook winds and the superior quality for both summer and winter grazing of the native grasses.

CENTRAL ALBERTA

In 1891, the Calgary and Edmonton branch of the Canadian Pacific railway was laid through Central Alberta with terminus at Strathcona. The country opened up by this north and south line is scarcely the same as the country under the characteristic influence of the chinook. The land is heavier and blacker; it has a

of mixed farming and of the country generally is considerably greater to the south than it is to the north of this centre. It is in this area that most of the dairy and special live stock enterprises of the province occur.

PEACE RIVER VALLEY

Alberta is really three provinces in one. It consists of the area under the chinook, which we shall call Southern Alberta, of Central Alberta, and of the Peace River country. The history of the Peace River



RANGE BANDS ARE STILL COMMON
Alberta, in 1915, had 238,000 Sheep

heavier type of vegetation; it retains its moisture well and there is less dissipation of moisture through the influence of drying winds. The class of settlement that took place along this line, right from the beginning, has been farm settlement. It is essentially a mixed farming country and at present exemplifies more special and intensive farming enterprises than any other part of the province. It, likewise, carries the densest population of any part of Alberta. Edmonton may be taken as the centre of this area, though the development

country is still to be written, but it is evident that home-making activities and heavy production will extend to a good distance north in this province. The building of railways has been rapidly followed by settlement and already a considerable volume of products, such as oats, wheat and also hogs, has found its way to Edmonton markets.

The Peace River country presents an attractive variety of resources. A good deal of the country is open, short grass country and the severity of the climate seems to be, to some

extent, ameliorated by a modified chinook influence. Other parts are a happy combination of open country and useful bluffs and the land is well watered.

THE IRRIGATOR

While the history of the northern part of the province is still to be written, and, while the character of the agricultural development of the central part of the province is more or less definite and fixed in character and has been the same from the beginning, Southern Alberta, on the other hand, has passed through a number of interesting and varied phases of development in a short period of time. The simple type of pastoral industry, represented in cattle, horse and sheep ranching, and which lasted up till 1900, was rather suddenly and drastically changed through the introduction of irrigation enterprises rather than through the gradual substitution of farm enclosures for the open range. It is not uncommon to read that Southern Alberta is too dry to raise crops without irrigation. This is a matter of superficial inference prompted by the fact of irrigation having been established in Southern Alberta.

Southern Alberta now has three large irrigation enterprises. The first of these was established about the year 1900, with headquarters at Lethbridge. It receives its water supply from the St. Marys river and the scheme takes account of the effective watering of about one-half million acres of land. This enterprise has been acquired by the Canadian Pacific Railway. The Canadian Pacific Railway Company established a still larger enterprise east of Calgary, with water service supplied from the Bow river, which undertook to water one million out of the three million acres of the total property in land held in this area by the company. The third enterprise was that of the Southern Alberta Land

Company, with headquarters at Medicine Hat. It likewise draws its supplies from the Bow river. It controls a total of one and three-quarter millions acres of irrigable land in these three enterprises alone, and there are a number of small ones besides.

Irrigation commonly means crop insurance, heavier crops, a greater diversity of crops, particularly in forage, roots, etc., and it makes live



THE RAPE PLANT IN ALBERTA

stock breeding and the establishment of commercial feeding enterprises certain and profitable. The value of irrigation in the production of crops has been fully demonstrated in Southern Alberta in relation to grain, fodders, especially alfalfa, roots, potatoes, etc., but there is scarcely so much to be said for the use that is made of the crop.

Irrigation is somewhat expensive in relation to ordinary grain farming,

and there is considerable straight grain farming carried on in the irrigated districts. Of better profit on irrigated lands is the practice of growing large quantities of a superior type of fodder, also some roots and a little grain, and the marketing of these through live stock. Besides the habit of grain-growing being too prevalent, where fodders are grown they are likewise sold off the farm. Seventy-five per cent of the alfalfa, for example, grown in the Lethbridge district is marketed for cash instead of through live stock.

DRY FARMING

The irrigation enterprises of the province as such are large and ambitious enterprises, but in relation to the whole of the agriculture of Southern Alberta, their importance is over emphasized. They are among the big things that stick out for the newspaper man. They are really important in Alberta agriculture on account of the intensive modern type of work for which they stand in the first place, and for starting the dry farmer coming in the second place. Irrigation was no sooner established in Alberta than there followed quickly a large immigration of farmers, who believed that they could produce crops successfully in Southern Alberta without artificial watering, and there is no doubt but that they have made out their case, but without reduction in the credit, benefit or advantage of irrigation.

There is no doubt but that the making common of the knowledge underlying the practice of dry farming, and the making common of the practice itself, have been of the greatest benefit to general agriculture. An examination of the precipitation records for points in Alberta shows that there is not much difference between Central and Southern Alberta as to the total or absolute precipitation. The average for the Edmonton district is between eighteen and twenty inches and for

the Calgary district the average falls within the same limits. To put the matter in a simple way; Southern Alberta looks dry on the unbroken prairie and in a certain sense is dry because the run-off is very rapid on unbroken prairie. The chinook wind likewise gets away with a lot of moisture both in summer and winter. It will remove a foot of snow in three or four hours, or, what it does not remove, it will drive into the coulees, and it is likely to do this two or three times during a winter. Towards the end of June or the first of July, it will change the whole prairie vegetation into well-cured hay.

The problem of the man who decides to change a piece of the prairie into a farm is to get the water into the land and keep it in. The breaking of the prairie creates a reservoir for moisture, the working of the surface keeps the moisture from travelling back into the air. The dry farmer is really in conflict with the chinook and he can beat it out by deep ploughing, the summer fallow, surface working and in some cases by cover crops, packing, stubble manure, etc.

The largest yields of grain in the province during the past two years have been in Southern Alberta on lands that were not artificially watered. It is quite true that the seasons have been very favourable. The rainfall has been heavy during the growing season. In 1912-13-14, there were a good many failures in Southern Alberta, but there were likewise some successes.

MIXED FARMING UNIVERSAL

The changes which have come over Southern Alberta have resulted in making the whole of the province a mixed farming country. The big stock ranges are, to a large extent, a thing of the past. They are, at least, in the cases of horses and cattle. The sheep men, however, are holding on successfully. They have to dodge about more

than pleases them among the wire fences, but sheep have to be herded in any case and are better adapted than either horses or cattle to use the scattered pieces of unoccupied land between the farms. There is no doubt, but that the proportion of land devoted to grain on Southern Alberta farms is, and will continue to be, larger than in Central Alberta. At the same time Southern Alberta farmers are trying to increase their stock.

ANNUAL FODDER CROPS AND ENSILAGE

It cannot be said that on Southern Alberta lands we have succeeded in

alfalfa, corn and oats, and other mixtures have been used for ensilage with entire success.

The purpose of this somewhat lengthy setting out of the history of Alberta agriculture is to show that over the whole of the province of Alberta there has been an effective adjustment of farming methods to conditions such as to make all good land productive and profitable, and to give to all our work the necessary quality of conservation besides.

FIGURES ON ALBERTA PRODUCTION

The habit of setting out our achievement in figures is a popular one in Western Canada. So much



FODDER CORN IN SOUTHERN ALBERTA

establishing good tame meadows. Alfalfa, however, succeeds on both irrigated and unwatered lands. The bulk of summer fodder on cultivated land is from such crops as fall rye and grain mixtures, rape, etc. The production of adequate forage, however, is wholly possible. On both the provincial demonstration farms in Southern Alberta large dairy enterprises are carried on and home-grown feed is plentiful on both places. There is a silo on each demonstration farm in the province. At Claresholm, Medicine Hat, Sedgewick and Vermilion, fodder corn for this use succeeds well. At Olds and at some of the farms already mentioned, green oats, oats and peas,

development of every sort has been compressed into a small period of time that figures in relation to western progress commonly listen well. The following table, for example, indicates the progress that has been made in bringing lands under the plough and in increasing the production of grain:

	Total Crop Area	Total Yield of Grain
1906.....	591,614	19,333,266
1907.....	576,821	14,588,852
1908.....	837,641	25,073,147
1909.....	1,242,644	36,761,493
1910.....	1,193,261	22,027,184
1911.....	1,732,648	50,907,531
1912.....	2,391,752	64,465,058
1913.....	2,799,267	75,575,682
1914.....	2,586,169	58,895,709
1915.....	3,668,238	164,332,483

This, roughly speaking, is a seven or eight-fold increase in acreage and grain in a decade. The total production of 1915 grain in the table above is nearly three times as much as the production for the year 1914. There are two reasons for this. The first is the encouragement given by both the Dominion and the Provincial Governments for the production of food supplies during the war time. The other reason is the phenomenal season of 1915. During the grain season of 1915 (this may be taken to include May, June and July), the total precipitation in Southern Alberta was two and one-

in the province will take comfort in observing that, while the wheat yield of 1915 was such as to establish a wonderful reputation for production, and was such as to put many farmers, very much in need of it, well on their feet, we in Alberta swing strongly towards the production of coarse grains. While our total wheat production last year ran to sixty millions, our production of oats, barley and rye ran over one hundred millions. This is a necessary condition for the support of the live stock and dairy enterprises, which are becoming year by year more important in the agricultural



A CHARACTERISTIC WHEAT FIELD
In 1915 Alberta produced 60,000,000 bushels of wheat.

half times as great as it was in the previous year. Some phenomenal yields of wheat were reported from Southern Alberta both last year and this year, which show the adaptability of the Southern Alberta climate and its soil for wheat production. An outstanding example is the case of Mr. Noble, of Nobleford, Alberta, who this year breaks the thousand-acre record for spring wheat with the yield of 54.39 bushels. In spite of the signal successes here recorded in wheat growing in Alberta, those who are interested in the achieving of a permanent type of agriculture

work of the country.

The average yields of standard grains, spring wheat, winter wheat, rye, barley and oats, over a period of ten years, are as follows:

Spring wheat.....	20.16
Fall wheat.....	22.40
Oats.....	36.99
Barley.....	26.60
Rye.....	19.32

CONSTITUTION OF NORTHERN SEED GRAIN

As has been shown, Alberta, in common with the other prairie provinces, shares an enviable reputation

LIVE STOCK CENSUS

in the contribution of liberal supplies of commercial grain to the food resources of the Empire. In addition to this, there is an important development of specialized seed production appearing in the province. It is a recognized law in seed production that the farther north a crop can be made to mature satisfactorily, the better constitution the seed has. There has already been considerable evidence of the superiority of Alberta seed grain. Turkey Red from Kansas, when grown in Alberta, was given a separate grade by reason of its superior quality, and became Alberta Red. It weighed more to the bushel and produced a larger and bolder kernel. The same thing is happening with regard to spring wheat. Samples of Alberta oats have been known to go fifty-one pounds to the bushel, and at one of the provincial seed shows the ten first samples went over forty-eight pounds to the bushel. Within the past two years sufficient business has been done in the placing of timothy seed on eastern markets to indicate that in the future we shall have considerable business in the production of grass seed. The production of alfalfa seed is in its beginning, but experiments with home-grown seed have demonstrated its superiority over the imported seed that is used. On the whole, there appears to be a chance of building up on our general agricultural production a superstructure of specialized work in the furnishing of a good class of seeds to some of the other provinces of the Dominion, and to the northern tier of states. Large supplies of oats have already found their way through the seed houses to the United States' markets and, this year, spring wheat will probably be furnished in large quantities.

It appears to be difficult to show by figures the development of the live stock industry of the province. Export figures are commonly secured from the transportation companies. These records are kept in different ways by the different companies. Export figures, likewise, do not teach us much with respect to production. There have been times when the increase in population was so rapid in the province, that production could not any more than keep pace with it. The cattle business has been rather unsettled, likewise, on account of the change from ranching to farm conditions. The same is true with respect to horses. The hog business has gone up and down in the different years with characteristic suddenness. The sheep business has, perhaps, been less subject to fluctuations than any other line of live stock work. Ranging of sheep still persists though it has not expanded. There has been a gradual increase in farm sheep and a tendency towards the larger introduction of sheep both in the mixed farming area and in the special grain-growing country. Apart from the present condition of stimulation of sheep interests, due to the high prices of mutton, and more especially wool, the sheep business has really languished, for it has not displayed a growth to parallel the general development of the province. Estimates vary between a quarter and a half-million, while it is quite clear that we could profitably maintain two or three millions. The pure-bred sheep business is improving. Alberta is the third among the provinces in the registration of pure-bred sheep, and it has a total about as large as the other two prairie provinces together in sheep of all kinds.

DAIRY PRODUCTION

The dairy interests of the province are in a very healthy condition. Our production is increasing rapidly. The standard of our products is improving and is now recognized as high. The work of the Department of Agriculture which stands between the consumers, including the trade, on the one side, and the producers, including the manufacturers, on the other side, is resulting in good things. During the year 1915, the total production of creamery butter was 7,376,871 lb., which was an increase of 35.48 per cent over the production in the previous year. The output of cheese was 372,693 lb., as against 70,580 lb. in 1914. There were 57 creameries and 13 cheese factories in operation during the year. The principal markets for Alberta butter have been, and still are, British Columbia and the Yukon. In British Columbia, the Alberta product is displacing New Zealand butter. Last year, ten cars were, likewise, shipped to Montreal and Toronto. The Commissioner's office in Calgary marketed ten per cent of the creamery product. The Dairy Commissioner has succeeded in making the closest possible adjustment to the needs of consumers and the trade with respect to the way butter is put up. On the side of production, the closest scrutiny and inspection are carried on in regard to the manufacturing processes, and during the year ninety-six per cent of the cream used was bought on grade.

The development of production in both butter and cheese over the last ten years is shown in the following table:

	Creamery Butter	Cheese
1906.....	2,000,000	97,739 lb.
1907.....	1,500,000	195,000 "
1908.....	2,100,000	190,000 "
1909.....	2,550,000	224,000 "
1910.....	2,315,000	220,000 "
1911.....	2,540,000	100,000 "
1912.....	3,000,000	40,000 "
1913.....	4,115,000	70,716 "
1914.....	5,450,000	70,581 "
1915.....	7,376,871	372,693 "

DIRECTIVE AND EDUCATIONAL FORCES

The discussion of Alberta agriculture would be wholly incomplete which did not take account of the work of the Department of Agriculture for the province. The organization and working of administrative and educational agencies are as much a part of agricultural achievement and potentiality as the growing of fifty pound oats or the making of Alberta creamery firsts. The Department of Agriculture has always carried out active educational work in the interests of the fundamental industry of the province. This includes both popular education and systematic agricultural education. We quote from the annual report of 1915 what may be taken to be the position of the Department with regard to the need of aid to the settler:

"The conditions of the country by reason of its newness involves active administrative and executive work, but, likewise and chiefly, a great deal of educational and directive work. Most of our people are on the land. Most of them are from other countries or other provinces of the Dominion itself. The conditions of soil, season and general climate are new to them. Many of them have not farmed in any country or at any time before. This makes necessary the carrying on of a vigorous policy in popular and practical education, that is, the education of adults who are actually engaged in farm work. To this end, all the branches of the Department carry on active educational work, through the demonstration farms, fairs, and institutes, conventions, district agents' work, short course schools, demonstration trains and through bulletins and correspondence. There is likely to be a constant and continuous demand and need for this type of work. New crops, new methods of soil and farm management and the opening of new areas are going to make it necessary to give all the direction and assistance possible to those on the land to enable them to establish prosperous homes and enterprises and to promote national production. It is true likewise that western farm communities are eager for information and improvement and are quick to put into practice new plans and ideas."

AGRICULTURAL SCHOOLS

The Department of Agriculture has established a system of what might be called Trade or Technical Schools in agriculture for the assistance of the farm boys and girls of the province. There are three of these now in operation and the number will probably increase. Stated briefly, these schools give a two years' course, with five-month sessions in each year, beginning in November and closing at the end of March. The work for boys consists of field husbandry, animal husbandry, farm mechanics, veterinary science, dairy, poultry and horticulture, elementary chemistry, physics, botany and entomology underlying agriculture, farm management, book-keeping and English. The girls have cooking, sewing, laundry, home-nursing, sanitation, together with the sciences underlying their work, English and mathematics. The courses in dairy, poultry and horticulture are open to girls as well as boys. Courses are free; they are held in winter when the boys can get away from the farm. The work is co-educational as far as possible. Considerable attention is paid to extending the social experience of pupils. At the same time, the schools are actually situated on farms and are, in all cases, essentially rural districts, and not adjacent to

large towns or cities. The schools, as a development in agricultural education, appear to stand out as the first successful attempt in the Dominion of establishing special educational services for farm boys and girls in the period between the public school and the university, assuming that the state has a right and duty to provide a complete system of educational services in agriculture.

The Department of Agriculture works in effective harmony with the Department of Education and the university. The Department of Education has arrived at a definition and limitation of the scope of agriculture in the public schools with respect to which the Department of Agriculture is in full accord. The Department of Education does an important work in school gardens; the district agents of the Department of Agriculture are doing an important work in home gardens among school children. The provincial schools of agriculture serve not only as special training schools with regard to the practice and science of agriculture and home-making for boys and girls who are going back to the farm, but they are, likewise, articulating and preparatory schools in relation to the faculty of agriculture in the university. Last year thirteen boys from the schools of agriculture were in attendance at the university.

BRITISH COLUMBIA

BY WM. E. SCOTT, DEPUTY MINISTER OF AGRICULTURE

BRITISH COLUMBIA, the Pacific Maritime Province of Canada, has an area of approximately 372,000 square miles, or 238,080,000 acres. To give an idea of size by comparison, this area is greater than the combined areas of the British Isles, France, and Belgium, or slightly less than the combined areas of Germany and Austria-Hungary.

The province is bounded on the south by the American States of Washington, Idaho, and Montana, on the north by the Yukon and Mackenzie territories, on the east by the Rocky Mountains, and on the west by the Pacific Ocean and a portion of Alaska.

British Columbia is the western gateway of Canada, and through its portals in the future is bound to flow a large part of Canada's trade to the Orient, antipodes, and, now that the Panama canal is an accomplished fact, to the nations of the old world also. A considerable portion of the produce from the golden grain fields of the Middle West will also be diverted this way, and passing through the ports of Vancouver, Victoria, and Prince Rupert, will then be carried to the markets of the world by sea-going traffic.

Before it was better known, British Columbia used to be referred to as a "sea of mountains".

It is true that a large proportion of the province is composed of mountain ranges covered with stately trees of Douglas fir, cedar, spruce, hemlock, tamarack, pine, and other commercial timbers—an inexhaustible supply of national wealth—and, also, hidden in the bowels of the earth, awaiting development and exploitation by the enterprising hand of man, are unlimited supplies of gold, silver, copper, lead, zinc, iron, coal, and other minerals.

But, in addition to these potential sources of wealth, we have a large area of the finest kind of agricultural land, in our fertile valleys, benches, and plateaus, where everything that is necessary for the most successful prosecution of agriculture in all its branches, and for the highest production from the soil, is present.

EVOLUTION OF FARMING

The first farming done in the province was in the neighbourhood of the city of Victoria, on Vancouver Island, and New Westminster on the Lower Mainland. These are the two oldest cities of the province, and on the neighbouring lands, stock and farm produce was grown to supply the wants of these small, but growing cities.

Later, in the '40's, the great gold rush to the Cariboo took place, and many people realized that here

was a golden opportunity to supply with produce at good prices the mining camps that were constantly springing up on all sides.

It was at this time that the beginning of the stock ranging industry took place, and bands of cattle were pastured on the Chilcotin, Thompson, and Nicola valleys—districts in which the bunch grass grows.

From now on, agriculture began to slowly increase. Many of the hardy pioneer Cariboo miners, after having amassed a competency, retired from the strenuous life of hunting for the precious metal, and took up land on the picturesque banks of the Fraser or Thompson rivers, or on the fertile plains of the Lower Mainland, or Vancouver Island.

It is only, however, during the past twenty years that any material progress has been made in agriculture. During this time, many settlers, principally from the mother land, have been attracted to this province and have settled in all our agricultural districts, engaging in fruit growing and mixed farming.

A considerable settlement has also taken place from Eastern Canada and the Prairie Provinces, and the United States, people being attracted by the many advantages offered for the making of happy homes amidst pleasant surroundings.

FARMING POPULATION

British Columbia has a total population estimated at 450,000. Out of this, the farming population is about 75,000. Home production for the year 1915 totalled \$31,127,000, giving a *per capita* production for every man, woman, and child in the province of about \$70.

AREA OF AGRICULTURAL LANDS

Various estimates have been made as to the amount of land in the

province suitable for agriculture. It is impossible, in a province of the character of British Columbia, to give any reliable figures, owing to the size and configuration of the country. Any statement in this regard that may be made can only be an estimate. The writer would state that in his opinion there are at least 20,000,000 acres of land suitable for farming in the province, and, in addition, many millions of acres suitable for pasturage purposes.

A large part of the great Peace River district is practically unexplored, and very little is known about the agricultural possibilities of the Omineca, Cassiar, and Atlin districts.

CLIMATIC CONDITIONS

In a province the size of British Columbia it is only natural that climatic conditions should vary considerably. In the northern confines of the Peace River district the growing season is short, and the winters cold, whilst in many of the southern sections almost sub-tropical conditions exist.

The Japanese current crosses the Pacific with a westerly drift, laving the shores of Vancouver Island, the Gulf Islands, and the Pacific littoral, thereby giving to these districts a mild and equable climate the year round.

The spring, summer, and autumn months are bright, sunny, and with no excesses of heat, the winters mild and rainy. The unique climatic conditions enjoyed by these favoured sections have made them very popular from a residential standpoint, people being attracted thither from all parts of the world by the delightful climate, magnificent scenery, and fine sporting attractions which are afforded.

The warm winds caused by the Japanese current, after it reaches the coast, are carried in an easterly direction until they are arrested by the coast range, in passing over which

they lose their moisture-laden contents, and become rarified, thus giving to the interior valleys and plateau lands a drier climate, with warmer summers and colder winters.

AGRICULTURAL AREAS

In order to give a general idea of the different conditions obtaining in the various sections of the province, the following short description is submitted:

parts in which the costs of land clearing are reasonably low, and consequently a considerable amount of land settlement has been effected.

Vancouver Island is essentially adapted for intensive diversified farming on a comparatively small acreage. It is particularly well suited for dairying, poultry, sheep and hogs.

Tree and small fruits grow well on suitable soils, and yield abundant crops of the best quality of fruit.



STRAWBERRY GROWING, VANCOUVER ISLAND

For the sake of convenience the province may be divided into five different districts, each with different climatic conditions:—

(1) *Vancouver Island and adjacent Gulf Islands.*—This district is covered with a growth of commercial timber varying in density, and consisting principally of Douglas fir, cedar, spruce and hemlock. Whilst the cost of clearing the heavier timbered portions is high, and in many cases prohibitive, there are many

A great variety of garden produce is also grown to the best advantage.

The average rainfall of the south-eastern part of Vancouver Island is approximately 40 inches, whilst on the west, northern coasts, and interior parts of the island, there is a considerably heavier precipitation, ranging all the way from 40 to 120 inches.

Some settlement has been effected on the west coast of the island, and crops of all kinds yield well.

The cost of clearing the virgin forest and the excessive precipitation are the chief retarding factors to a more rapid settlement.

On the east coast of Vancouver Island, between Victoria and Prince Rupert, are many islands, on which there is a considerable amount of farming carried on. The most southerly of these islands are veritable gems of the Pacific, with ideal climatic conditions, and wonderful scenic

washed down from the mountain ranges of the interior by the turbulent waters of the mighty Fraser river.

This highly productive area grows heavy crops of grain, hay, grasses, fodder plants, roots, small fruits and garden produce. Crops of 100 bushels and over of oats to the acre are quite common, and hay will yield as high as five tons per acre.

It is primarily a stock and dairying



DAIRY AND POULTRY FARM, LOWER MAINLAND, B.C.

attractions. As on Vancouver Island, mixed farming is principally followed. A very fine quality of fruit is grown on the Gulf islands, with good colour and keeping qualities.

(2) *Lower Mainland*.—This district includes what is commonly known as the Delta of the Fraser river. It is a tract of country between the coast range and the sea, formed of alluvial silt, which, through countless ages, has been

district. Pasturage grows in rank luxuriance, and, with the mild winters experienced, stock can pasture outside practically the year round. Very fine herds of pure-bred dairy cattle, sheep and hogs, are seen on all sides.

The timber on the uncleared land is fairly heavy, but the proximity of these lands to the large market of Vancouver, and their wonderful productiveness, justify the expense of

clearing in most instances.

Poultry raising is also extensively followed. Some sections of the higher lands are well suited to both tree fruits and small fruits. There is a considerable trade done with the prairie provinces, in rhubarb, strawberries, raspberries, loganberries, etc.

The rainfall in this district will average about 65 inches.

(3) *Interior valleys of Southern British Columbia.*—This section takes in all the country south of the line of the Canadian Pacific railway to the international boundary line, between the coast range and the Rocky Mountains, the principal districts being the Thompson valley,

to the markets of Alberta, Saskatchewan and Manitoba, and considerable shipments are also made to New Zealand, Australia, and South Africa. These valleys, in addition to being fruit districts, are also well adapted to mixed farming. Alfalfa and corn grow to the best advantage, thus affording the right conditions for the most economical raising of stock.

The present tendency amongst farmers is to engage more in mixed farming, in addition to their fruit-growing, to keep more stock on the place, and thus add to their returns, and at the same time conserve the fertility of the soil.

Silos are being erected on all



HAYING OPERATIONS, LOWER MAINLAND, B.C.

Nicola, Okanagan and Shuswap, Similkameen, Boundary, Kettle valley, Slocan and Arrow lakes, East and West Kootenay, and Columbia valley.

Most of these valleys have been developed along fruit-growing lines, for which they are so eminently adapted. A remarkable quality of fruit is grown in these beautiful sheltered fertile valleys, which has captured leading awards at all centres in which fruit has been exhibited.

It is estimated that the Okanagan valley alone will ship out during the present year about 2000 carloads of fruit, and 1000 carloads of vegetables, this produce going principally

sides, and the number of stock kept is rapidly increasing.

The climatic conditions in these interior valleys are radically different from those obtaining in the Coast sections. The spring, summer, and autumn months are ideal, whilst the winters are cold, but with plenty of bright sunshine.

Crops are grown under irrigation in most of these valleys, many extensive irrigation systems having been installed.

(4) *Central British Columbia.*—This district will take in the country north of the main line of the Canadian Pacific railway to the Naas

river, which flows into the Pacific Ocean near Prince Rupert, the Pacific terminus of the Grand Trunk Pacific railway, some of the principal districts being Lillooet, Cariboo, Chilcotin, Nechaco, Fraser lake, Ootsa and Francois lake country, Bulkeley valley, Kispiox valley, Kitsumkelum, and Lakelse Lake valleys, and the Naas river country.

This part of the province is rapidly coming to the fore as a great agricultural country. The recent com-

Grand Trunk Pacific.

The Chilcotin, Cariboo, and Lillooet districts are essentially suitable for stock-raising purposes. Here, the nutritious bunch grass holds sway, and beef cattle come off these ranges in the fall of the year in prime condition for the butcher without the necessity for any artificial fattening.

The country is open rolling land, with timber here and there. As a rule, irrigation is necessary for grow-



PICTURESQUE AND PROFITABLE
This Plot Averaged 103 Bushels per Acre in 1916

pletion of the transcontinental line of the Grand Trunk Pacific and the Canadian Northern railways, and the near completion of the Pacific Great Eastern railway have afforded good transportation facilities to the different districts, and, as a consequence, rapid settlement is being effected.

The Pacific Great Eastern railway when completed, will link up the cities of Vancouver and Prince Rupert, on the main line of the

ing crops, though experimental work in crop production by dry farming methods has clearly demonstrated that good results can be obtained in many parts where water is not available, and these areas of land will undoubtedly in the near future be cultivated by these methods.

Further north, between Tete Jaune Cache, where the Grand Trunk Pacific and the Canadian Northern railways pass into the

province through the portals of the Rocky Mountains, and the city of Prince Rupert, are many good areas of farming lands, and this part of the province is attracting a considerable settlement at the present time.

The districts mentioned are all well suited for grain growing, stock raising and general mixed farming.

Primarily this is a stock country. Pea-vine and wild grasses grow everywhere, and afford the best of pasturage. The cost of land clearing is light, compared with the Coast districts. Light alder, poplar, and cottonwood, are the predominant trees, with spruce groves here and there. There are many tracts of open land ready for the plough.

The rainfall averages between 20 and 40 inches, according to districts. The summers are fine and warm, with a short but rapid growing season. Summer frosts occasionally cause trouble, but with the settlement and clearing of the land, these frosts will no doubt disappear. The winters are fairly cold, but dry and bracing. Excessive low temperatures, when they occur, are of short duration.

(5) *Peace River*.—The Peace River is the north-eastern part of the province. Lack of transportation facilities in the past has kept back settlement, but the near completion of the Dunvegan-British Columbia railway has brought in many land-seekers during the past few years, and a considerable settlement has taken place in the Fort St. John and Pouce Coupé districts of the Dominion Peace River Block, comprising 3,500,000 acres.

The writer has not yet had an opportunity to visit this part of the province, but all reports would indicate that in these northern confines of the province are vast areas of land which will, in the future, be profitably developed on grain-growing and stock-raising lines.

The shortness of the growing season is counter-balanced by the very rapid growth made during the

hot weather. All grains yield heavy crops, whilst potatoes and other vegetables do well.

In addition, there is a very large extent of land which would be well suited for stock ranging purposes. Winter temperatures are low, but not excessively so.

I have endeavoured, in this short description of the different agricultural areas, to give a general idea of the farming opportunities possessed by each. The predominant fact which stands forth as regards agriculture in British Columbia is that with the exception of the more northerly parts, and certain of the stock-ranging districts, the province is primarily suited for intensive diversified farming on a smaller acreage than is the case in the provinces of the Middle West.

British Columbia is the youngest of the provinces in agriculture, but its opportunities are second to none. Our fertile soils, along with the fine climate which we enjoy, give the right conditions for growing a wide variety of crops to the best advantage.

HORSE-RAISING

A considerable number of horses are bred in the province, principally on the bunch grass lands. Horses raised on these lands have a wonderful stamina and vitality, as the testimony of the officials who made extensive purchases for military purposes would indicate.

On the lower mainland and Vancouver Island, many stock men are raising a fine type of Clydesdale and Shire horses. The cessation of civic and municipal activities during the past few years has naturally militated against the breeding of heavy horses.

DAIRYING

This lucrative phase of farming is followed to a greater or less extent in all districts of the province, the coast districts leading in the quan-

tity of milk and butter produced. Many of the dairy herds of the lower mainland and Vancouver Island would be a credit to any country.

The Holstein is a favourite breed for milk supply, the Jersey, Guernsey and Ayrshire for butter.

The health of our dairy herds is of a high standard, due to the progressive policy adopted by the Government during the past five years, having as its object the eradication

testimony to the suitability of the province for dairying.

SHEEP

Sheep-raising has not been given the attention which its importance as a profitable phase of the live stock industry would justify, but with the rapid advance in prices of wool and mutton which have lately taken place, stock men are beginning to



THE HOLSTEIN IS A FAVOURITE FOR MILK SUPPLY IN BRITISH COLUMBIA

of bovine tuberculosis from dairy herds. Testing for this insidious disease is by the intradermal method, and all dairy cattle are at regular periods subjected to the test, and all reactors destroyed, compensation being afforded to the owner.

The average butter production for the British Columbia cow is higher than in any other province in Canada, being 220 lb. butter fat, or the equivalent of 260 lb. butter—a good

realize that they have not been alive to their opportunities, and, in all parts of the province, sheep are being kept in increasing numbers by farmers.

Whilst there are certain districts in which sheep may be ranged in considerable numbers, as a rule the sheep industry will be developed as a branch of mixed farming, and small flocks of well-bred sheep on the farm will be the rule.

BEEF CATTLE

The bunch grass lands of the interior are where our prime steers are produced. There are many large cattle owners in the Thompson, Nicola, Princeton, Boundary, Chilcotin, Cariboo, and Lillooet districts, though the extensive ranges, originally controlled by a few large cattle owners, are now being cut up by the settlement of preceptors and others, thus putting the industry into the hands of many in the place of few.

The growing of alfalfa and other crops for winter feeding by these settlers will mean that a large number

GRAINS

British Columbia cannot be described as a grain-growing country. There is a considerable amount of grain grown, but practically all of it is fed to stock on the farm, very little being exported. Our lands are too expensive for straight grain-growing. Better returns can be secured by feeding to stock the grain that farmers produce. These remarks apply to the more settled portions of the province.

Our grain production for the market will in future principally come from the Peace River district, and



"RED POLLS," LOWER MAINLAND, B.C.

of cattle will be kept, which, of course, is a desirable consummation.

A trip through these stock districts at the time of the fall round-up is a pleasant experience.

Thousands of head of prime fat steers in ideal condition for the block bear eloquent testimony to the nutritive and fattening qualities of the famous bunch grass. The beef industry will also in the near future be greatly extended in the more northerly parts of the province, where conditions are eminently suitable.

from some of our dry farming areas in Central British Columbia. Wheat, oats and barley yield abundant crops in all parts of the province.

The average grain yields of British Columbia for the year 1915 were as follows:—

Wheat.....	31	bushels per acre
Oats.....	77 1/2	" "
Barley.....	47	" "

HAY

Timothy, clover, alfalfa and other grasses yield abundant crops. Very little hay is exported, practically all being fed to stock on the farm.

FODDER CROPS

A large quantity of fodder crops is grown, especially in those districts which are principally given over to dairying. Corn is grown in all parts of southern British Columbia for ensilage purposes, and in some parts of central British Columbia also. Silos are rapidly being constructed in all parts of the province, due to a large extent to the demonstration work on silo construction and the growing of corn, that has been carried out during the past few years by the Department of Agriculture.

POTATOES

The acreage devoted to potatoes is yearly increasing, and tubers of the finest quality are produced. A considerable export business has been built up during the past few years. A careful inspection of all potatoes shipped out of the province is made by officials of the Department, thus ensuring a good standard of quality.

FRUIT

British Columbia has made a name for itself in fruit-growing. Though this industry is of comparatively



YOUNG ORCHARD, KELOWNA, B.C.

Alfalfa gives good returns in all the interior districts of southern British Columbia, and in many parts of the northern country. As many as four cuttings per year are made in the best districts.

Thousand-head Kale is also popular amongst dairymen, and provides good succulent feed for the winter months.

ROOTS

All roots yield heavy crops, but are not grown to the extent they should be.

recent origin, it has made very rapid strides. The value of the fruit crop of 1910 was approximately \$250,000, whilst it is estimated that the value of the crop for the present year will be as high as \$1,700,000.

Fruit is successfully grown in all districts of the province, with the exception of some of the more northerly confines. The quality of Vancouver Island strawberries, Lower Mainland raspberries, and the big red apple of the Thompson, Okanagan and Kootenay, is well

known to dwellers in the Prairie Provinces, where the larger part of our crop is marketed.

British Columbia secured the gold medal of the Royal Horticultural Society, Vincent Square, London, the blue ribbon of fruit growing, for eight consecutive years, against all comers, whilst the province each year captures the leading awards at the Spokane Apple Show.

VEGETABLES

A considerable quantity of vegetables is produced to supply home markets, and, in addition, a large quantity is exported to the Prairie Provinces. Tomatoes, celery, onions, cauliflower, cabbages, potatoes, etc., are shipped in large quantities from the Coast districts, the Okanagan and Kootenay countries, and find a ready sale as far east as Winnipeg.

FARM CREDIT

At the session of the Provincial Legislature of 1915, the Agricultural Act, commonly known as the Agricultural Credit Act, was passed. Under the provisions of this Act, authorization is given for the borrowing by the Government of the sum of \$15,000,000 for the purpose of loaning to farmers. The Act provides for the appointment of a Board of Commissioners, which has now been made.

Early in the present year, the sum of \$1,000,000 was secured, and the Act put into operation. The money is loaned for certain specific purposes, such as drainage, land clearing, fencing, the erection of farm buildings, purchase of stock, implements, and other purposes, which are calculated to increase agricultural production.

Long dated loans are made on the amortization plan for periods of 36½ years, 30 years, or 20 years. Short dated loans for a period to be determined in each case at the dis-

cretion of the Commission, not less than three years and not to exceed 10 years, may also be made. Such loans need not be amortizable, but may be made on such terms and conditions as the Commission deems fit.

Single seasonal loans may also be made for financing crop operations, etc. Such loans shall be repayable within twelve months from the date of the application.

Before any loan is granted by the Board, a careful valuation of the property is made by the appraisers appointed by the Board, and not more than 60 per cent of the value as determined by the appraiser, calculated on the basis of value and productiveness, when the improvements in respect to which the loan is desired, shall have been effected, can be loaned.

A considerable portion of the money required has already been placed out in loans. The chief drawback under which farmers have laboured in the past has been the impossibility of securing a long-term loan at a reasonable rate of interest for the legitimate development and extension of his farm. This legislation of the Provincial Government meets this difficulty, and it is confidently expected that the successful experience of New Zealand and other countries will be repeated in this province, and that a great stimulus and encouragement will be afforded to agriculture.

CO-OPERATION

That farmers are beginning to realize that effective co-operation, along sound business lines, is necessary for the best success, is plainly evident by the many co-operative societies that have been incorporated under the Agricultural Act. Many co-operative creameries, fruit growers' associations, and similar organizations, have recently been started, and are doing good work for their supporters in reducing the cost of production by co-operative

buying and securing better prices for produce by co-operative selling. This work is in every way encouraged and supported by the Department of Agriculture.

MARKETS

British Columbia farmers can produce goods of the highest quality, but successful marketing is the all-important question. The solution of this problem is gradually being effected by proper organization, through the aid of this Department.

Material assistance is afforded towards the best placing of the farmers' produce by the work of the market commissioners in the prairie provinces and in our Coast markets, who keep the farmer and fruit grower in close touch with market conditions and requirements.

The wealth of the province in minerals, timber and fish is well-known, but we have not sufficiently in the past realized the additional

source of national wealth we have in our millions of acres of fertile soil, which are awaiting the hand of man to bring forth the fruits of the earth in abundance. The soil is the basis of national wealth, and permanent prosperity can only come to the country that develops to the fullest extent its agricultural opportunities.

VALUES, BRITISH COLUMBIA AGRICULTURAL PRODUCTION, 1913-15

1913.....	\$26,222,033
1914.....	30,184,100
1915.....	31,127,801

VALUES, AGRICULTURAL IMPORTS FROM OTHER PROVINCES IN CANADA INTO BRITISH COLUMBIA, 1913-15

1913.....	\$12,936,980
1914.....	19,908,455
1915.....	13,493,807

VALUES, AGRICULTURAL PRODUCTS IMPORTED FROM FOREIGN POINTS INTO BRITISH COLUMBIA, 1913-15

1913.....	\$7,133,777
1914.....	5,290,670
1915.....	2,941,163

